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The Oil Man's Calendar

JUNE 7	Illinois-Indiana Petroleum Association, Robinson, Illinois.
9–10	Liquefied Petroleum Gas Association, Pacific Coast Section, San Francisco.
16–20	American Society of Mechanical Engineers, Petroleum Division, Kansas City, Mo.
19–20	Pennsylvania Grade Crude Oil Association, Bradford.
19–21	Twentieth Anniversary Celebration, Arkansas Petroleum Industry, El Dorado.
20–21	Kentucky Oil & Gas Association, Mid-Year Meeting, Lexington.
SEPT. 8–12	American Chemical Society, Atlantic City.
17–19	National Petroleum Association, Atlantic City.
NOV. 2–7	American Petroleum Institute, Annual Meeting, San Francisco.

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THE OIL WEEKLY

JUNE 2, 1941

VOLUME 101 NUMBER 13

The Changing Panorama

PRESIDENT ROOSEVELT'S proclamation of an unlimited national emergency May 27 makes available to him sweeping authority over the oil industry, it is disclosed by a study of the laws under which the proclamation was issued.

A compilation of the powers which may be used by the President, compiled by Russell B. Brown, general counsel of the Independent Petroleum Association, indicates that in the event of actual war there would be little necessary other than taking over of pipe lines and other systems of transportation to give the government full control over petroleum resources, production and uses.

Brown listed as possible steps which may be taken by the President under the proclamation the following:

Requisition any oil tankers under our flag.

Control petroleum movement through pipe lines or by other transportation methods.

Give preference to shipments of petroleum products to firms having defense contracts.

Give the Army discretionary power in purchasing petroleum supplies.

Order war materials, including petroleum products, at prices determined by the Secretary of War.

Take over facilities for manufacturing toluene.

Suspend tariffs and permit free importation of any commodity.

Cancel appropriations for any federal agency, including that for enforcement of the hot oil law.

Suspend labor laws affecting federal contracts.

Control the national credit absolutely.

Suspend trading in any registered security.

At a press conference May 28, however, the President indicated he had no present intention of invoking any of the powers made available under the proclamation.

He indicated that there will be a minimum of interference with the normal course of American life in the effort to get the country on a war-time footing. At the same time, it was not denied that the whole course of American industry must be changed if the defense program is to go through on schedule; that change already has partly been accomplished during the first year of the effort.

Rails Move Oil . . .

Transportation of crude oil and petroleum products in 1940 brought United States railroads $232,059,839 or 6.8 percent of all carload freight revenue, a report of the Interstate Commerce Commission discloses. Refined products accounted for $202,883,496 of this total, or 14.1 percent of all railroad revenue from manufactured products.

The 1940 petroleum revenue of the rails was nearly $15,000,000 under the 1939 total of $246,813,742, but the tonnage of petroleum products originated increased slightly to 60,797,161 tons against 60,057,437 tons in 1939. Of the 1940 shipments only 5,035,027 tons were crude oil. This represents less than 3 percent of the crude oil produced, since most of it customarily moves by pipe line and tank ship. The crude-oil tonnage was a slight decrease from 1939, but was greater than in any other year since 1931.

Ruin Proposed . . .

At a time when the United States is preparing for democracy, which means free industrial enterprise among many other business and individual liberties, comes the most drastic suggestion for government regulation of petroleum yet proposed. It is made by Dr. William Beard, assistant professor of political science at the University of Wisconsin, in a study entitled "Regulation of Pipe Lines as Common Carriers," just released by Columbia University Press. Beard advocates immediate government regulation of the petroleum industry as a public utility.

He recommends weeding out of inefficient refineries, by asserting "Of what use is it to extract oil from the ground . . . and then process in some small plant by 'backwoods' methods which are 10 to 20 years behind the times, so that a large part of its useful content is wasted?" Peculiarly, recently released figures from the United States Bureau of Mines (see below) completely contradicts Beard's contention that refineries are out of date. Furthermore, the average yield of gasoline from a barrel of crude oil has increased from 26 percent in 1918 to 48 percent today, such progress indicating "backwoods" methods have been replaced with modern equipment.

Beard declares the struggle for business among oil companies, if encouraged through government regulation or public ownership capable of making effective common carriers out of pipe lines generally, might well lower prices, and continues with these words: "Indeed, if the competition became sufficiently intense, perhaps with the assistance of anti-trust actions and other measures, oil might sell below the actual cost of handling and refining, the gap being met through absorption of investors' savings."

Who, except those wanting democracy to be replaced by Communism or Naziism, would want to see destruction of industrial capital? How long would there be an intense struggle for business if any commodity was selling below cost without prospects for changed conditions? Any industry under such conditions would soon pass out of

existence, and instead of an adequate supply of the cheapest petroleum in the world there would be a shortage and very high prices in the United States.

While on this subject of government regulation of oil, we recommend the interesting article by Joseph E. Pogue on page 13 of this issue to you.

Many New Refineries . . .

Nearly one third of the capacity of United States petroleum refineries is less than four years old.

So rapid have been the changes in refining technology during the last 10 years, that since the beginning of 1937 refiners have built new capacity of 1,383,982 barrels a day, reports the Bureau of Mines. This is equal to 33 percent of the present total operating capacity of the industry, and to 30 percent of the total operating and shutdown capacity. In the same four-year period, refiners have dismantled or replaced capacity of 959,894 barrels daily, leaving a net increase of 424,088 barrels daily. This has brought total capacity to the new record level of 4,718,969 barrels daily on January 1, 1941.

Only about 75 percent of this capacity is being utilized to meet present all-time peak demands, so no lack of petroleum products will result from refining capacity shortage. On January 1, a total of 141,225 barrels of new refining capacity was under construction, and two to three times this amount is expected to be built during the year.

Industry Must Serve . . .

Since the President spoke to the world May 27 there can be little doubt that the affairs of the United States are entrusted to the decisions of one man to a greater extent than ever before. Whether this is wise or unwise is a minor question and for the future. Laws have been passed by which the status of unlimited emergency came about. The status must be accepted.

Although no state of war exists it is common opinion that actual combat on the part of the United States is certain to come. This prospect has come about in large part by the conduct of other nations. Our own contribution to it may have been wise or unwise, but settling that question must be left to historians.

There is common agreement that the United States needs a war machine more powerful than our military experts now vision. Its existence must be a reality within a short time. It must be manned by men who know its purposes and its limitations.

If the men of the industry and the men of government can concentrate on the creation of this machine their common objective will clear away some confusion. If the men of government and the men of industry can forget that industry is divided into capital and labor there will be further clarification. A pumper has as much at stake and is as much a part of industry as any technologist or executive and his contribution to the welfare of a nation is of as much value as that of any other workman.

More of our confusion would fade away if we could blend such words as capital, management and labor into one word—industry. Only industry can provide the war machine that will protect the welfare of the nation.

An Engineering War . . .

So far as personnel is concerned, the current war to a large extent is a battle of engineers. As everyone knows, engineers are responsible for the design, construction and production of airplanes, tanks, guns, and other fighting paraphernalia. But in addition there are seven engineers for every 100 non-engineers in the Army itself, who do a thousand jobs behind the lines.

With supplies of aluminum paint cut off by priorities for all uses except those which are strictly military, American chemists already have found an acceptable substitute to paint oil storage tanks. These are the first tanks coated with the new paint at the Point Breeze refinery of The Atlantic Refining Company. The paint was designed to reflect light and heat waves, and stand up under local climatic conditions.

Cores

Although United States tanker tonnage is 20 times what it was in World War I, gasoline and fuel oil rationing along the Atlantic seaboard is a distinct possibility within a few months because one fifth of the Gulf Coast-Atlantic tanker fleet is being diverted to British aid duty • • • Dr. Robert E. Wilson, chief consultant on petroleum for OPM: If the United States does not enter the war, 1941 domestic consumption of oil will be 9 or 10 percent above 1940. Demand for petroleum would rise another 5 percent should the nation enter the war toward the end of the year • • • Cumulative crude-oil production in Pennsylvania, granddaddy oil state, recently passed the billion barrel mark after 82 years of producing history. Gigantic 10½-year old East Texas field has produced 50 percent more oil than Pennsylvania • • • Rumors persist that Consolidated Oil Corporation is dickering for Cities Service Oil Company oil holdings • • • Mississippi's two oil fields, Tinsley and Pickens, have produced a total of 6-1/3 million barrels of oil since the state's first oil discovery in August, 1939 • • • Senator Elmer Thomas (Oklahoma), whose name was attached several years ago to a bill that would have provided a measure of federal regulation of oil production: "I am well satisfied with the conservation work now being done, and ceased long ago to be interested in federal regulation" • • •

Regulation Without Regimentation:

The Oil Industry's Contribution to Democratic National Economy

An address by Joseph E. Pogue, Vice President, Chase National Bank, before 1941 convention of National Oil Scouts & Landmen's Association, Dallas, Texas, May 30, 1941.

A GREAT philosopher has said: ". . . if mankind is to be enriched, to consolidate and perfect itself, there must exist a 'variety of situations.' Within each nation . . . there must be a diversity of circumstances, so that when one possibility fails others remain open." The experience of the petroleum industry provides an important illustration of this principle. At a time when the tendency is to stake our economic future on the one card of central authority, and the clouds of war threaten our liberties, it becomes the duty of those who have grown up with the oil industry to tell our citizens that in this domain there has been developed a democratic method of industrial regulation which should have a wide sphere of usefulness if its structure can be preserved and its advantages made sufficiently known. Not only has the oil industry provided our country with the basis for a higher standard of living in the form of personal mobility, thus extending our existence in both time and space, but it now offers an unusual method of cooperation between government and industry, proved by experience, which lends hope that our system of free enterprise can be conserved even in circumstances where competitive practices must be modified by the authority of the state. It remained for this brilliant young industry, pioneering in an effort to solve a problem of unique complexity, to

"At a time when the tendency is to stake our economic future on the one card of central authority, wide attention should be given the democratic method of industrial regulation developed by the oil industry—which lends hope that our system of free enterprise can be conserved even in circumstances where competitive practices must be modified by the authority of the state. To overlook the bearing of this technique upon the broader problems of regulation is to take a gratuitous step away from the democratic process. Recognition of the advantages to the public of the present system and an attitude of encouragement toward the further unfolding of this unique development may prove of the utmost importance to our national economy in the days to come."

demonstrate that the states, coordinated by a Compact, and acting within the framework of our Constitution, can regulate without regimentation and achieve results which no centralized authority can match.

In this time of upheaval throughout the world our intellectual concepts are endangered by the waves of emotion that engulf us, but the occasion demands clear thinking if our policies are to be soundly conceived. Democracy is a word on every tongue, and yet few pause to consider that the term is both a social and an economic concept involving not only our way of life but our manner of earning a living as well. Hidden behind generalizations and obscured by sentiment, the economic core of our democratic way is underrated in importance and its impairment is promoted by this lack of realism. Democracy envisions the preservation of our system of free enterprise under which success is won through competition. Our economic life is grounded upon competition and our system of economic enterprise requires the maximum degree of competition consistent with the social welfare. The qualification, however, is vital for it implies that under some circumstances competition needs to be tempered and this poses the question of the restrictions that properly may be imposed upon the initiative of the individual. The unabridged freedom of laissez faire implies no restraint; the full regimentation of totalitarianism denotes complete coercion. Somewhere in the middle ground stands our economy today and our destiny hangs upon the direction in which the system moves and particularly upon its final position after the current upheaval has run its course. It is to the solution of this issue that the petroleum industry offers its experience and example.

Should Produce Equilibrium

Where regulation is necessary in the public interest, the task—aside from a correct judgment as to the existence of the necessity itself—is to modify the competitive processes to the minimum degree compatible with the objective sought. The means to this end should be constructed with an automatic governor, or balance wheel, so that the regulatory system will produce equilibrium and not lead to increasing unsettlement by virtue of its own progression in either punitive or monopolistic directions. In this matter of changing degree lies the danger to our economy, for regulation has a way of feeding upon its host and expanding beyond bounds, like a cancerous growth.

It so happens that the petroleum industry has been confronted with a complex problem in regulation and, in the happy absence of an orthodox solution imposed from the outside, has worked out an original and practical answer in terms of a decentralized structure of laws and administrative procedure that functions with increasing effectiveness and avoids the stifling effects of regimentation. This industry has created a pattern of cooperation between business and government which is not only significant now but may prove to be invaluable to our country in the period of reconstruction. It would be a serious defeat for the democratic way of life if this evolutionary development were arbitrarily stopped in its progress and this pioneering industry recast in the rigid mold of centralization.

Peculiar Conflict

Not only has the problem of regulation in the oil industry been solved along distinctive lines, which therefore commends this variant to special attention, but the occasion for regulation in this field arose from a special set of circumstances well known in oil circles but obscured from the general view. The production of oil involves, aside from all the usual and familiar phases of competition, a highly specialized conflict between the surface pattern of divided land ownership and the sub-surface location of oil in single reservoirs. The lack of correspondence between units of ownership and units of underground occurrence sets in motion a phase of competition across property lines which, if unrestrained, forces such rapid withdrawals of oil that the natural forces are wasted and the ultimate yields are reduced. The whole matter of conservation is bound up in this circumstance. In the interest of efficiency, ways had to be found to retard the flow of oil wells to effective rates, despite the rule of capture which always tends to force speedy exploitation. In short, the need was to regulate output so as to avoid waste, but in so doing to keep from impairing the effectiveness of competition in economic directions. To the lasting credit of the petroleum industry, it has found these means and is ably applying them. Where else in the whole field of regulation can as much be said?

The system of regulation worked out in the oil industry over the past dozen years involves four elements: state conservation laws administered by state regulatory authorities; a close cooperation between producing interest and the state bodies; a coordinating mechanism in the form of an Interstate Oil Compact entered into by the principal oil-producing states and ratified by the Congress of the United States; and support by the Federal Government in the way of advisory estimates of demand, a law against the movement of illegally produced oil across state lines, and a flexible tariff policy controlling the volume of imports admitted into this country. This system did not spring full-blown into existence as the brain child of any group, but evolved step by step under the impulse of economic necessity and amidst the clash of a diversity of competing interests. Further progress in the development of this technique of regulation may be expected, provided the process is not deflected by the intervention of centralists who invariably invoke federal control for the solution of industrial problems.

Planned Pattern of Production

The procedures followed in the administration of this regulatory system involve the establishment of production quotas for the states and oil regions, the breakdown of these schedules into field allowables, and the assignment of appropriate rates of production to the individual wells. In this planned pattern of production, the United States Bureau of Mines provides monthly forecasts of demand, the state conservation commissions review these estimates and determine policies with the states, and the Interstate Oil Compact serves as a coordinating agent for standardizing and improving the various practices. As a result, our oil fields are now methodically and efficiently developed, oil wells are operated at partial capacity, instead of wide-open, and gushers are a thing of the past. Retarded flow permits the effective utilization of the natural forces of water drive and gas expansion, so that the flowing life of wells is greatly prolonged and, above all, a much larger recovery of the oil present in the formation is gained.

So striking has been the increase in efficiency of extraction that bil-

lions of barrels of actual and potential supplies have been added to the effective reserve. In addition, as by-products of this conservation program, the economic aspects of the business have been stabilized and the accumulation of productive capacity in excess of market demand is proving to be a particularly opportune circumstance at this time of greatly augmented requirements.

Checks and Balances

Nearly all the oil-producing states now have suitable conservation laws and the administration of them is continuously improving. The system is decentralized in structure and carries its own checks and balances. Its elements are subject to review by the courts, the state legislatures, and the Federal Congress, thus providing a balance between the interests of producers and consumers. Its administration is close to the problem at issue, thus keeping its orders practicable and workable. And above all, the framework admits sufficient internal competition to insure a continuation of progress. To convert this system into a centralized one would result in a rigid policy without external balance; would freeze the industry into a single pattern and lessen competition where competition is needed; and would open the way more easily to the control of economic functions detached from conservation. In short, centralization of the system would entail an unnecessary forfeiture of the competitive forces that are responsible for the remarkable growth and social contributions of this great industry.

The petroleum industry is highly technological, with its progress peculiarly dependent upon industrial research. Industries of this type employ large aggregates of capital and are intensely competitive, for only in such a setting does technology thrive. The phenomenal technical advances characteristic of oil are the resultant of its own enterprise in applying capital and competition to the resource; unlike some industries, less free to develop, oil has not subsisted upon borrowed technology. The preservation, therefore, of the highest degree of competition compatible with the public welfare is absolutely essential in the petroleum industry and the regulatory system should be such as to leave competitive forces as unfettered as possible.

While technology has been applied to all divisions of the oil business, and particularly to exploration, production, and refining a clear distinction must be drawn between the many areas where free competition is in the public interest and the one area, almost the single point, where the forces of competition need to be tempered by externally imposed rules of action. Artificial restraint, even the slightest hint of it, must be avoided at all costs in the search for new oil fields not only because a large reserve is needed to permit efficient rates of production but also because the original, unorthodox, and individualistic approach is essential to discovery. Untrammeled competition is hardly less desirable in the manufacturing branch in order to maintain the technical progress which has already done so much for the consumer in respect to both price and quality. Only in the sphere of crude oil production, in the physical operation of oil wells, is regulation essential and here only because the rule of capture would otherwise prevent the application of our best engineering practice. As the chemist devises a process for dissolving out an impurity without destroying the composition of the product, so the oil industry develops a regulatory system that eliminates the competition between leases which is harmful, but leaves unimpaired that normal body of competiton which is desirable.

It would be of interest to compare the results of regulation in the oil industry with the outcome in those industries where control has been centralized, such as the railroads and utilities. Here, in the one case, regulation has stifled initiative and practically all modern improvements in forms of transportation have come from sources outside the industry proper; while, in the other case, the regulation has moved to a punitive plane and is impairing the creative factors. It is the dynamic, rather than the static, result which is of critical importance.

A controlled industry can lose its urge for the promotion of its own technology, and yet, by the adoption of technology developed externally, reduce its costs; but still in the absence of effective competition, avoid passing on the benefits to the consumer. In a free industry, the same forces of competition that create technologic advances compel the transmission of the fruits of technology to the public in the form of lower prices, automatically and without plan on the part of anyone. There is no highly technological industry, free of centralized control, whose price structure has not shown a declining trend relative to the general price level. Certainly oil is an outstanding example of this rule; nor has its regulatory system altered the competitive forces sufficiently to modify this situation. A centralized system, on the contrary, if applied to the oil industry, could be expected to impair the competitive practices of the industry to the point of reversing its technologic progress with a consequent rise in costs and prices. The creative urge so potent in the petroleum industry must be conserved in the interest of our standard of living. This phase of conservation ranks along with, if not superior to, the ordinary meaning of conservation as applied to the resource itself.

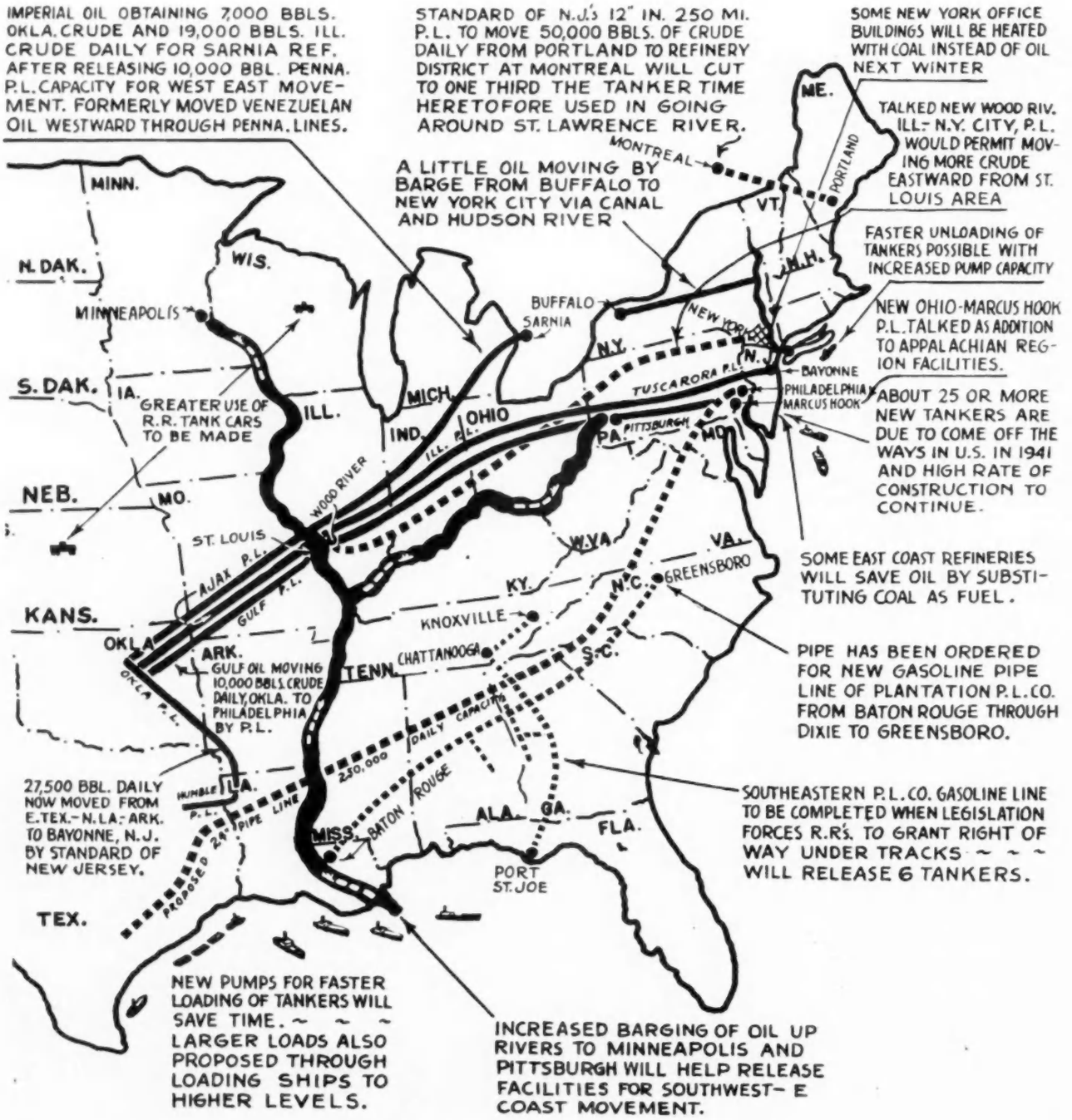
Five Great Accomplishments

If we were to draw up a social audit of the petroleum industry, we would find five great accomplishments to its credit: an expanding body of technology of extraordinary effectiveness; an integrated structure unifying the technology and transmitting the resultant economies to the consumer; a public relationship combining a low price level and a service both courteous and convenient; a decentralized regulatory system, conserving at the same time the resource, optimum competition, and our democratic forms; and, finally, as an unplanned but natural by-product, adequate capacity to meet the requirements of a great national emergency. In the face of these circumstances we may be pardoned for closing with a plea for the survival of the existing structure of the petroleum industry.

The regulatory forms developed in the conservation of oil may be commended to our lawmakers and administrators as an advance in the art of government that deserves the widest attention. To overlook the bearing of this technique upon the broader problems of regulation is to take a gratuitous step away from the democratic process. A recognition of the advantages to the public of the present system and an attitude of encouragement toward the further unfolding of this unique development may prove of the utmost importance to our economy in the days to come.

Industry and Government Act to Assure Adequate Oil for East Coast

Some steps already have been taken and others are contemplated, as shown below, for alleviating the shortage of oil transportation facilities from the Gulf Coast to the Atlantic Seaboard, following announcement of plans to divert 50 tankers to shuttling of South American oil to Canada for transshipment to Britain.


IMPERIAL OIL OBTAINING 7,000 BBLS. OKLA. CRUDE AND 19,000 BBLS. ILL. CRUDE DAILY FOR SARNIA REF. AFTER RELEASING 10,000 BBL. PENNA. P.L. CAPACITY FOR WEST EAST MOVEMENT. FORMERLY MOVED VENEZUELAN OIL WESTWARD THROUGH PENNA. LINES.
STANDARD OF N.J.'s 12" IN. 250 MI. P.L. TO MOVE 50,000 BBLS. OF CRUDE DAILY FROM PORTLAND TO REFINERY DISTRICT AT MONTREAL WILL CUT TO ONE THIRD THE TANKER TIME HERETOFORE USED IN GOING AROUND ST. LAWRENCE RIVER.
SOME NEW YORK OFFICE BUILDINGS WILL BE HEATED WITH COAL INSTEAD OF OIL NEXT WINTER
TALKED NEW WOOD RIV. ILL.- N.Y. CITY, P.L. WOULD PERMIT MOVING MORE CRUDE EASTWARD FROM ST. LOUIS AREA
A LITTLE OIL MOVING BY BARGE FROM BUFFALO TO NEW YORK CITY VIA CANAL AND HUDSON RIVER
FASTER UNLOADING OF TANKERS POSSIBLE WITH INCREASED PUMP CAPACITY
NEW OHIO-MARCUS HOOK P.L. TALKED AS ADDITION TO APPALACHIAN REGION FACILITIES.
ABOUT 25 OR MORE NEW TANKERS ARE DUE TO COME OFF THE WAYS IN U.S. IN 1941 AND HIGH RATE OF CONSTRUCTION TO CONTINUE.
GREATER USE OF R.R. TANK CARS TO BE MADE
SOME EAST COAST REFINERIES WILL SAVE OIL BY SUBSTITUTING COAL AS FUEL.
PIPE HAS BEEN ORDERED FOR NEW GASOLINE PIPE LINE OF PLANTATION P.L. CO. FROM BATON ROUGE THROUGH DIXIE TO GREENSBORO.
GULF OIL MOVING 10,000 BBLS. CRUDE DAILY, OKLA. TO PHILADELPHIA BY P.L.
27,500 BBL. DAILY NOW MOVED FROM E. TEX.-N. LA.-ARK. TO BAYONNE, N.J. BY STANDARD OF NEW JERSEY.
SOUTHEASTERN P.L. CO. GASOLINE LINE TO BE COMPLETED WHEN LEGISLATION FORCES R.R's. TO GRANT RIGHT OF WAY UNDER TRACKS ~ ~ ~ WILL RELEASE 6 TANKERS.
NEW PUMPS FOR FASTER LOADING OF TANKERS WILL SAVE TIME. ~ ~ ~ LARGER LOADS ALSO PROPOSED THROUGH LOADING SHIPS TO HIGHER LEVELS.
INCREASED BARGING OF OIL UP RIVERS TO MINNEAPOLIS AND PITTSBURGH WILL HELP RELEASE FACILITIES FOR SOUTHWEST-E COAST MOVEMENT.
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Tanker Problem Overshadows Ordinary Economic Factors

By L. J. LOGAN, Associate Editor

THE oil industry currently is in a strange role, which nobody very far back could have foreseen, having had cast upon it overnight the responsibility of finding a solution to the problem of getting along henceforth with 50 to 75 tankers less in supplying crude and refined oils along the Atlantic Coast.

The difficulties involved in this situation, which has arisen through the diversion of ships from the domestic trade to shuttling service for Great Britain, have largely overshadowed all other economic considerations for the industry. And within the span of a few months, the industry has passed through these contrasting conditions: (1) a slow recovery—in most of 1940—from the ill effects of surplus gasoline, lubricants, and other products, which accumulated largely through loss of export business; (2) sharply accelerated recovery—in March, April, and May—when increased domestic consumption began to compensate for lost export business, and when the larger demand and better balancing of crude production and refinery runs with demand strengthened markets; (3) sudden dislocation of operations through the tanker situation, which threatens to necessitate industry-wide readjustments, from well to retail outlet, in holding down inconvenience to consumers and loss of business for the oil companies.

The oil industry this year has been confronted with the greatest consumer demand for its products ever experienced in its history, despite the fact that exports have dwindled to far less than half their pre-war proportions.

But upon the requisitioning of the tankers, the industry suddenly faced the problem of meeting this extraordinary demand without its normal tank ship facilities, which had been adequate but not excessive for prevailing and anticipated movements of oil.

The industry, therefore, now views statistics on large market demand with some misgivings instead of elation. Ready markets are quite desirable when they can be supplied. But they threaten to become an important problem if material difficulty is experienced in supplying them.

It is to be expected, of course, that any scarcity of oil which may arise on the Atlantic seaboard, through deficiency of tankers, will have its compensating effects. Unless the normal laws of economics are impeded, through government action, scarcity of oil on the East Coast would force prices up, and loss of volumes of business by the oil companies would be at least partially compensated by the higher prices.

However, the chief concern of the oil industry, probably, in the present disturbed situation, is the danger of protests from the consuming public over any increases in oil prices that may arise in consequence of the transportation difficulties.

The oil industry could not be

Petroleum Demand Up 4.4 Percent in First 3 Months

Figures indicate barrels, and are from Bureau of Mines.

	MARCH			FIRST THREE MONTHS		
	1940	1941	Percent Change	1940	1941	Percent Change
SUMMARY—						
Total Demand	121,997,000	127,829,000	+ 4.8	355,821,000	367,341,000	+ 3.2
Daily Average	3,935,000	4,124,000	+ 4.8	3,910,000	4,082,000	+ 4.4
Exports:						
Crude Petroleum	4,046,000	1,988,000	— 50.9	11,575,000	5,017,000	— 56.7
Refined Products	7,583,000	5,414,000	— 28.6	20,074,000	15,135,000	— 24.6
Total Exports	11,629,000	7,402,000	— 36.3	31,649,000	20,152,000	— 36.3
Domestic Demand:						
Total Domestic Demand	110,368,000	120,427,000	+ 9.1	324,172,000	347,189,000	+ 7.1
Daily Average	3,560,000	3,885,000	+ 9.1	3,562,000	3,858,000	+ 8.3
TOTAL DEMAND FOR PRODUCTS—						
Motor Fuel:						
Domestic	44,607,000	48,606,000	+ 9.0	122,534,000	136,203,000	+ 11.2
Exports	2,265,000	2,044,000	— 9.8	6,442,000	5,454,000	— 15.3
Total	46,872,000	50,650,000	+ 8.1	128,976,000	141,657,000	+ 9.8
Aviation Gasoline:						
Domestic	457,000	547,000	+ 19.7	1,358,000	1,593,000	+ 17.3
Exports	336,000	[1]497,000	+ 47.9	793,000	1,292,000	+ 62.9
Total	793,000	1,044,000	+ 31.7	2,151,000	2,885,000	+ 34.1
Kerosene:						
Domestic	6,273,000	6,778,000	+ 8.1	20,178,000	21,031,000	+ 42.3
Exports	485,000	165,000	— 66.0	1,174,000	339,000	— 71.1
Total	6,758,000	6,943,000	+ 2.7	21,352,000	21,370,000	+ 0.1
Gas Oil and Distillate Fuels:						
Domestic	16,187,000	[2]19,753,000	+ 22.0	56,272,000	58,471,000	+ 3.9
Exports	2,318,000	[3]1,037,000	— 55.3	5,101,000	3,423,000	— 32.9
Total	18,505,000	20,790,000	+ 12.3	61,373,000	61,894,000	+ 0.8
Residual Fuel Oils:						
Domestic	31,188,000	[4]32,735,000	+ 5.0	90,784,0000	96,990,000	+ 6.8
Exports	932,000	[5]1,206,000	+ 29.4	2,840,000	3,183,000	+ 12.1
Total	32,120,000	33,941,000	+ 5.7	93,524,000	100,173,000	+ 7.1
Lubricants:						
Domestic	1,883,000	2,263,000	+ 20.2	5,459,000	6,428,000	+ 17.8
Exports	1,193,000	703,000	— 41.1	3,350,000	1,981,000	— 40.9
Total	3,076,000	2,966,000	— 3.6	8,809,000	8,409,000	— 4.5
Wax (thousands of pounds):						
Domestic	19,343	34,865	+ 80.2	71,558	103,426	+ 44.5
Exports	25,642	13,766	— 46.3	75,051	37,945	— 49.4
Total	44,985	48,631	+ 8.1	146,609	141,371	— 3.6
Coke (short tons):						
Domestic	119,900	114,500	— 4.5	383,400	428,600	+ 11.8
Exports	13,700	10,500	— 23.4	35,800	36,800	+ 2.8
Total	133,600	125,000	— 6.4	419,200	465,400	+ 11.0
Asphalt (short tons):						
Domestic	254,200	295,800	+ 16.4	547,000	734,100	+ 34.2
Exports	18,900	19,200	+ 1.6	62,300	54,500	— 12.5
Total	273,100	315,000	+ 15.3	609,300	788,600	+ 29.4
Road Oil:						
Domestic Demand	111,000	66,000	— 40.5	311,000	255,000	— 18.0
Miscellaneous:						
Domestic	123,000	311,000	+152.8	398,000	785,000	+ 97.2
Exports	126,000	53,000	— 57.9	377,000	137,000	— 63.7
Total	249,000	364,000	+ 46.2	775,000	922,000	+ 19.0

[1] Includes 54,000 barrels anti-knock compounds. [2] Includes 634,000 barrels bunker oil. [3] Includes 9,000 barrels exported from bond. [4] Includes 1,755,000 barrels bunker fuel oil. [5] Includes 36,000 barrels exported from bond.

justly blamed for price increases resulting from conditions beyond its control. But there is no assurance that industry actually would go free of blame if oil prices should materially advance.

And in the event of public protest, the industry doubtless would be very near to the federal government control that it repeatedly has had to oppose strenuously in recent years.

It is to be expected, consequently, that the industry will be spurred on to extreme effort to work out a successful solution to the transportation problem, not only by its repeatedly demonstrated eagerness to serve its customers well and to do its part in national defense but also by its desire to avoid facing renewed agitation for federal control.

It may not be too much to hope, therefore, that the industry, given any needed government cooperation, will be able to get along satisfactorily without the tankers that it already has given up and henceforth will give up, largely compensating for the surrendered boats by providing new transportation facilities and by increasing the efficiency of existing facilities.

Steps already have been taken which will compensate to limited extent for the diversion of the tankers, including the inauguration of movement of about 37,500 barrels daily of crude from the Mid-Continent through two pipe line systems to the New York and Philadelphia areas, stepping up of movements by barges up the Mississippi and Ohio rivers, increased use of railroad tank car facilities, government action to force railroads of the Southeast to permit oil companies to proceed with construction of two gasoline pipe lines to serve that region, switching of some Atlantic Coast refineries to coal instead of oil as fuel, and substitution of coal for fuel oil in heating buildings of the East. In addition, some expansion of capacity of existing pipe lines across the country, from Southwest to Northeast, is believed possible and likely. Last, and perhaps most important, is the apparently serious proposal to build a 20- to 24-inch pipe line, of estimated capacity of 200,000 to 300,000 barrels daily, from Texas and Louisiana to the New York area, for moving crude oil to refineries in the latter district, with the idea in mind that the line subsequently could be converted economically into a natural gas line.

Moreover, in the tanker field itself, considerable relief from the shortage of boats may be expected. In the first place, the ships left in the hands of the oil companies for the domestic trade doubtless will henceforth be made much more than normally efficient. Increased efficiency will be accomplished by speeding up loading and unloading of boats, with the aid of expanded pumping capacity; by more careful dispatching of crudes and products; perhaps by more heavily loading boats, in view of the emergency; by delaying repairs to tankers longer than normally; and by effecting miscellaneous savings in time. In the second place, construction of tankers currently under way is being rushed as much as possible, and although it has been figured that about 25 tankers would come off the ways in 1941, there are hopes of a substantial speeding up of construction this year and subsequently, in view of the scarcity that has arisen in this vitally necessary form of transportation.

An important prospect which apparently has been overlooked by many, moreover, is that of a slowing down of the expansion of gasoline consumption after this summer in reflection of the scheduled sharp curtailment of production of

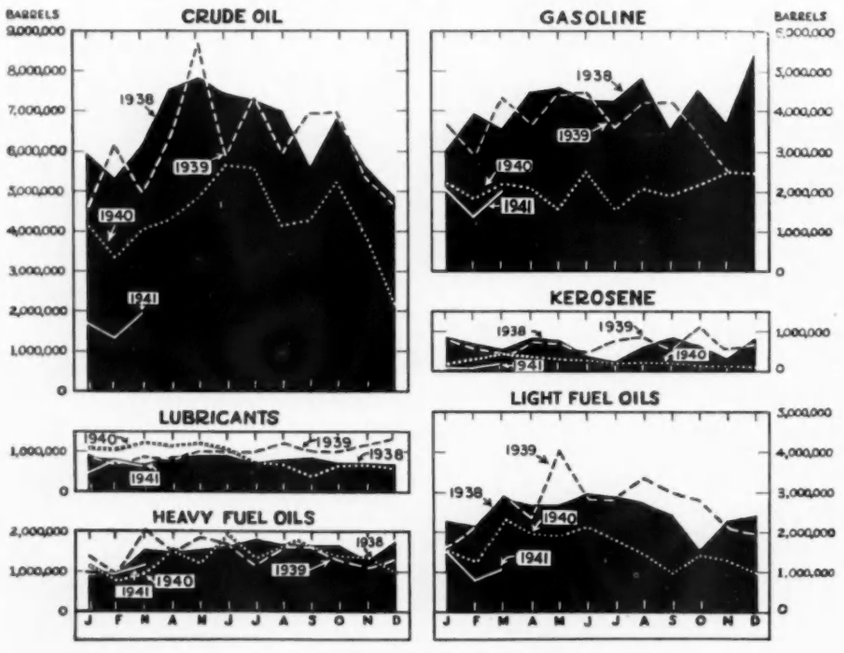
Total Oil Exports Off 36 Percent in First Quarter

Figures indicate barrels, and are from Bureau of Mines.

ITEM	MARCH			FIRST 3 MONTHS		
	1940	1941	Percent Change	1940	1941	Percent Change
Crude Oil	4,046,000	1,988,000	— 50.9	11,575,000	5,017,000	— 56.7
Products:						
Motor Fuel	2,265,000	[1]2,044,000	— 9.7	6,442,000	5,454,000	— 15.3
Aviation Gasoline	[2]336,000	497,000	+ 47.9	793,000	1,292,000	+ 62.9
Kerosene	485,000	165,000	— 66.0	1,174,000	339,000	— 71.1
Gas Oil and Distillate	2,318,000	[3]1,037,000	— 55.3	5,101,000	3,423,000	— 32.9
Residual Fuel Oil	932,000	[4]1,205,000	+ 29.4	2,840,000	3,183,000	+ 12.1
Lubricants	1,193,000	703,000	— 41.1	3,350,000	1,981,000	— 40.9
Wax (thousands of pounds)	25,642	13,766	— 46.3	75,051	37,945	— 49.4
Coke (short tons)	13,700	10,500	— 23.4	35,800	36,800	+ 2.8
Asphalt (short tons)	18,900	19,200	+ 1.6	62,300	54,500	— 12.5
Miscellaneous Oils	126,000	53,000	— 57.9	377,000	137,000	— 63.7
[6]Total Refined Products	7,583,000	[5]5,414,000	— 28.6	20,074,000	15,135,000	— 24.6
Total Crude and Products	11,629,000	7,402,000	— 36.3	31,649,000	20,152,000	— 36.3

[1] Includes 8,000 barrels benzol and 306,000 barrels exported from bond. [2] Includes 54,000 barrels anti-knock compounds. [3] Includes 9,000 barrels exported from bond. [4] Includes 36,000 barrels exported from bond. [5] Exclusive of 17,000 barrels exported from noncontiguous territories but inclusive of 1,058,000 barrels shipped from U. S. to territories and inclusive of 351,000 barrels exported from bond. [6] Not the sum of the above figures, some of which do not indicate barrels.

U. S. Exports of Crude Petroleum and Refined Products



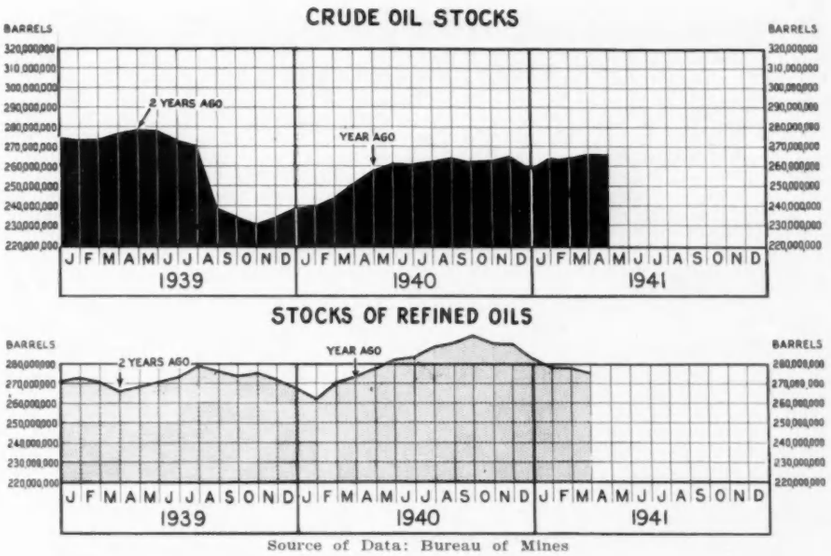
Source of Data: Bureau of Mines

automobiles. To make available for use in war equipment the materials that would be required in manufacturing passenger automobiles, the production of the latter will be cut at least 40 percent beginning in August, and there have been some hints that output of those cars will be reduced much more sharply than that, if not entirely eliminated. This definitely planned curtailment of automobile production may be expected to be reflected before long in gasoline consumption, as every month brings the scrapping of a large number of worn-out vehicles, which must be replaced by new cars if there is to be no decrease in the number of automobiles in use.

Furthermore, a somewhat similar prospect is offered in connection with consumption of heating oil. Government authorities so far have denied that they contemplate discouraging installation of new oil burners for the sake of conserving heating oil, but they have hinted that manufacture of new burners may be restricted, through taxes or withholding of needed materials, in order to release such materials for use in armament. However, the government conceivably may attempt also to alleviate the East Coast oil scarcity by action holding down installation of additional burners. Weather conditions next fall and winter may, of course, minimize or exaggerate any scarcity of the burning oils.

In view of all these developments and possibilities, some petroleum economists and analysts for investment trusts are disposed to be confident that he petroleum industry will continue to function without serious impairment of volumes of business through the tanker situation; that the loss of tonnage will be virtually if not entirely compensated; and that demand for petroleum products will continue to grow and to be met by the industry, despite a possible relatively short retardation through the present transportation difficulties.

Likewise, men of the oil industry, traditionally self-reliant and sanguine, refuse to be greatly disturbed by the tanker situation, regarding it as simply another obstacle which may be somewhat troublesome but which certainly can be overcome, just as other difficulties have been solved in the past. Furthermore, the steps promptly taken already seem to justify that attitude.


CRUDE OIL STOCKS
BARRELS
2 YEARS AGO
YEAR AGO
J F M A M J J A S O N D J F M A M J J A S O N D J F M A M J J A S O N D
1939
1940
1941
STOCKS OF REFINED OILS
BARRELS
2 YEARS AGO
YEAR AGO
J F M A M J J A S O N D J F M A M J J A S O N D J F M A M J J A S O N D
1939
1940
1941

Source of Data: Bureau of Mines

It must be conceded, nevertheless, that further steps to alleviate the tanker shortage are urgently needed. In its forecast for June, the Bureau of Mines pointed out that gasoline on hand in the East Coast district on May 1, 1941, aggregated 900,000 barrels less than in 1939, when the level of stocks was relatively low, while inventories on the Texas Gulf Coast were 3,500,000 barrels greater than in 1939.

The tanker problem may become a serious factor, the bureau stated, particularly if combined with larger naval fuel oil requirements and further increases in total domestic demand that will require a more complete use of refinery capacity.

Increased refinery operations in the Indiana-Illinois, Appalachian, and Mid-Continent refinery districts are indicated, according to the agency, and to the extent that larger crude oil requirements are met within those areas, reductions in accumulated storage will be necessary to supplement current production for such states as Oklahoma and Illinois; while ultimately, pipe line movements of crude from more distant sources will be stimulated.

In view of the strong domestic demand for motor fuel and probable further substantial increases in fuel oil requirements, the Bureau of Mines advised that refinery runs should be at a high level and that no abnormal reductions of storage are desirable.

Domestic demand for motor fuel in June is estimated by the bureau at an amount 8 percent greater than the abnormally large actual demand of June, 1940, and 11 percent above the estimated normal for that month. Exports of motor fuel for June of this year are estimated at 1,700,000 barrels, the same as the estimate for May.

Changes From Year Ago in Stocks of Crude and Refined Oils in the United States

(Figures indicate Barrels)

LATEST WEEKLY DATA

(Sources: Crude stock, Bureau of Mines; all other figures American Petroleum Institute.)

STOCKS OF:	May 24, 1940	May 24, 1941	Percent Change
Gasoline	101,557,000	94,811,000	— 6.6
Gas Oil & Distillate	27,413,000	33,102,000	+20.8
Residual Fuel Oil	102,932,000	93,774,000	— 9.0
Crude Oil	*257,647,000	†262,645,000	+ 2.0

LATEST MONTHLY DATA

(Source: Bureau of Mines.)

ITEM	Stocks at End of March 1940	1941	Percent Change
SUMMARY—			
Crude Petroleum:			
Refinable in U. S.	251,120,000	266,380,000	+ 6.1
Heavy in California	13,485,000	11,776,000	—12.7
Natural Gasoline	5,393,000	5,331,000	— 1.1
Refined Products	273,845,000	275,560,000	+ 0.6
Total, all Oils	543,843,000	559,047,000	+ 2.8
Days' Supply:			
March basis	138	136	— 1.4
3 Months Basis	139	137	— 1.4
PRODUCTS—			
Gasoline:			
Finished	96,467,000	91,717,000	— 4.9
Unfinished	5,393,000	5,331,000	— 1.2
Total	101,860,000	97,048,000	— 4.7
Aviation Gasoline	4,818,000	6,876,000	+42.7
Kerosene	4,114,000	6,724,000	+63.4
Gas Oil & Distillate Fuels	23,086,000	30,009,000	+30.0
Residual Fuel Oils	89,351,000	82,899,000	— 7.2
Lubricants	8,084,000	8,637,000	+ 6.8
Wax (Thousands of Pounds)	90,373	121,887	+34.9
Coke (short tons)	624,000	375,000	—39.9
Asphalt (short tons)	699,000	831,000	+18.9
Road Oil	924,000	892,000	— 3.5
Miscellaneous	368,000	369,000	+ 0.3
Other Unfinished Oils	36,920,000	40,227,000	+ 9.0

* Stocks May 18, 1940.
† Stocks May 17, 1941.

Economic Selection of

Oil Field Equipment

Part 1

General Economic Principles Affecting Equipment Selection

WITH economics playing an increasingly important role in the industry, due in large part to prolongment of the investment-payout period because of production curtailment, the selection of equipment must be considered carefully if operations are to result in profit. The accompanying article is the first of a series that will discuss various factors influencing the overall cost of equipment.

The series has been prepared especially with the practical oil man in mind, all but the most necessary fundamental methematics being eliminated, and in every case where it was felt such were required the final result has been reduced to an easily understandable and practical chart.

Emory N. Kemler, the author, holds degrees of Bachelor of Science and Mechanical Engineering from the University of Kansas, and Master of Science and Doctor of Philosophy from the University of Pittsburgh. He has engaged in engineering work for Dodge Manufacturing Corporation, been assistant professor of mechanical engineering at the University of Pittsburgh, done research work for the engineering division of Gulf Research & Development Corporation, been production engineer for Gypsy Division of Gulf Oil Corporation at Tulsa, and at present is associate professor of mechanical engineering in Purdue University's School of Mechanical Engineering.

By EMORY N. KEMLER
Associate Professor, School of Mechanical Engineering, Purdue University

THE oil-production engineer in the future will have to give careful consideration to the economic problem incident to producing operations. In applying equipment to new wells, each equipment application will have to be met on the basis of that producing method which will give the greatest overall return on the investment. The economic changes which have taken place in the oil-producing industry during the past few years will, if they continue, result in greatly modified equipment policies and types of equipment.

Until the past few years there has been little difficulty for a well organized company to make a profit in the production of oil. Any decision to drill wells, apply equipment, make replacements, etc., during this period was based on a payout period of from a few months to a maximum of one to two years; that is, money was not invested in the industry unless there appeared to be a reasonably good chance of having the investment returned in this short period. Any additional return on investments went to pay operating expenses and the remainder was profit. With any reasonable care and luck in the selection of risks there would be little difficulty in making a profit when operating under such a policy. Conditions have, however, changed radically and at present investments are made on the basis of long payout periods; the order of five to ten years. In these cases a different method of determining the proper investment and method of operation must be applied. On the previous policy with payouts of an average of one year or less, interest on investment, taxes, obsolescence, and operating expense, do not have to be considered so carefully to insure making a profit. However, when the period on which the investment is returned is increased to a matter of the order of ten years the interest charge becomes an important item, and with the advent of technological developments investments may become obsolete very quickly. It is entirely possible that improvements might be introduced which would lower overall operating costs sufficiently to justify replacement long before installed equipment was worn out or began to give trouble. Under these conditions it is obvious that a new system of economics must be set up for equipment selection which would take into

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account, in addition to the things mentioned, the probabilities of the future. This method would not be at all unlike that which has been in use by the public utility corporations. Under this new set of conditions the question of operating expense and maintenance as well as the carrying charges on the investment have to be considered.

Cost of Production

Because of the element of probability involved, the cost of producing oil in a given area or even by a company is almost impossible to predict. If a company is large enough the cost of geological, geophysical and exploratory drilling costs may assume some average value and might be taken into account in the operation of any area or property. Such an analysis will be complicated and will vary. The actual expenses incidental to producing the oil, however, are subject to more scientific analysis. The following discussion will deal only with the economics of a developed or proven property; that is, with the expenses involved in actually producing the oil.

The cost of production, including the drilling cost, of a property can be considered as being made up of operating expense and fixed charges. The operating expense or what is often called production expense will be made up of the following general items:

Labor—
- Pumpers
- Roustabouts
- Miscellaneous labor
- Foreman and his assistants
- Contract labor

Supervision—
- Salaries of indirect supervisors
- General clerical and office help
- Office supplies and expense
- Administrative expense

Repairs or maintenance—
- Labor
- Material
- Contracts
- Miscellaneous

Power cost—
- Fuel and water
- Electricity, if purchased
- Prorated plant charges if electricity, gas or a central power is used as power sources.

General lease supplies and maintenance.

The fixed charges will be made up of these items which must be met whether the property is operated or not. These expenses are:

Depreciation of equipment—
- Pumping equipment
- Casing
- Tubing
- Lease tanks
- General lease service equipment

Obsolescence of equipment.
Retirement of intangible expense—
- Drilling cost
- Right of way
- Rentals
- Unrecoverable equipment expense

Taxes on equipment.
Interest.
Insurance.

Operating or Production Expense

Of the items listed in the above outline of operating expense, labor probably receives the most attention. It is a common practice for everyone to give the most attention to those obvious and current items of expense. Normally this is considered a necessary expense and one about which little can be done. The various proposals for unitization and partnership operations are trends toward eliminating duplication of labor and to operate each laborer to capacity. Recent developments in equipment operation have made available a new possibility for control of this expense. The introduction of automatically controlled electrical pumping has been one attempt along this line. Recent developments of small centrally operated equipment also offer possibilities in the reduction of labor requirements.

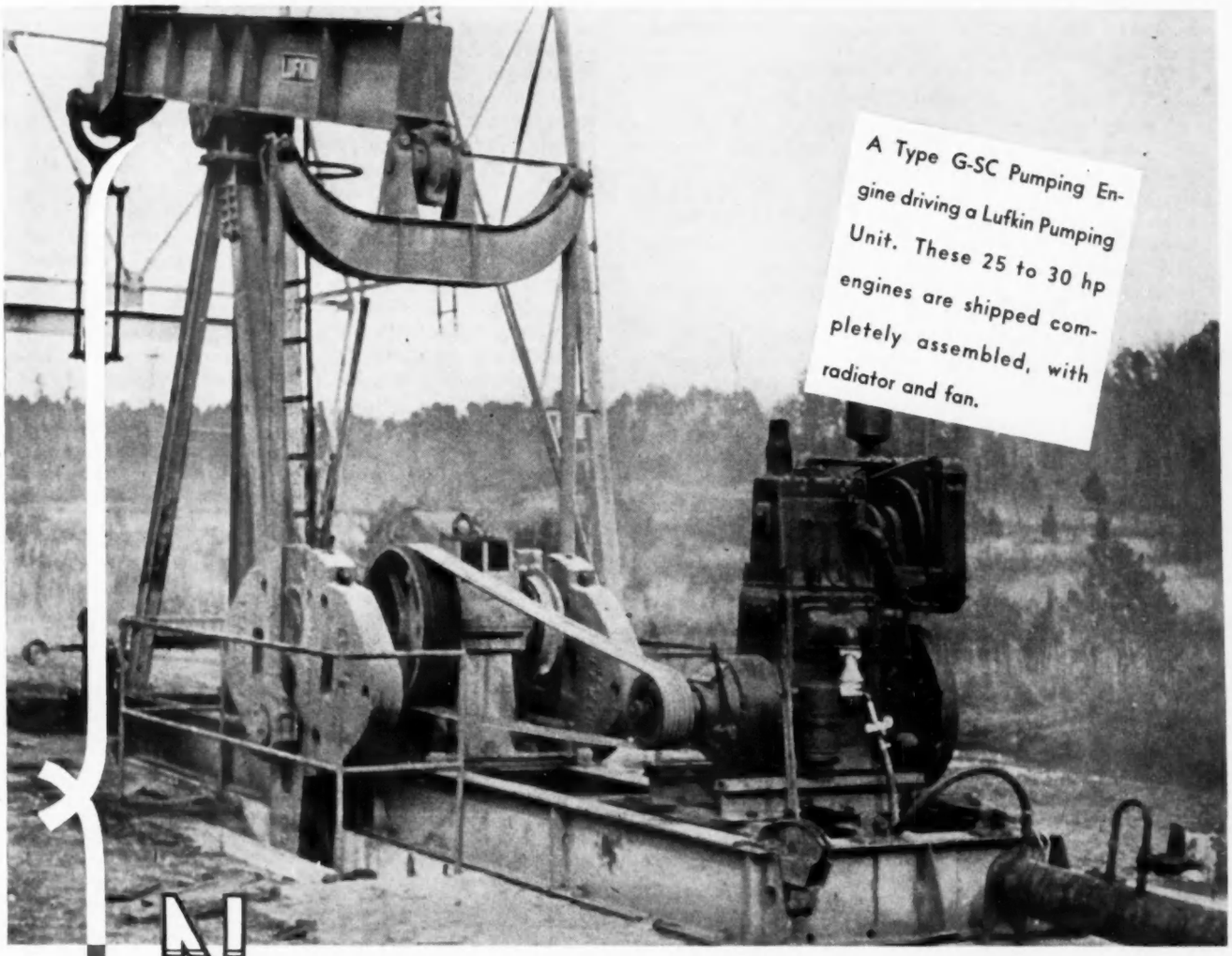
Proration has completely changed the methods in which companies can operate. Since the allowed production can be obtained over a period of time it is possible to use an entirely different type and in some cases, different size of equipment. This possibility introduces a new element which must be considered in the selection of equipment, namely, the amount of labor which is required under various conditions.

Supervisory expense is difficult to analyze and generally will not have much bearing on equipment selection. Of course, there is no doubt that with proper selection of equipment and operating methods the amount of help generally required will be kept at a minimum. Much of the supervisory expense is required to furnish reports and information for general use and is, therefore, subject to only limited control.

The item of repairs or maintenance is dependent largely on the equipment which is selected and the manner in which it is operated. This item is made up of labor to make the repairs and the cost of the material to replace the defective or broken parts. Maintenance expense may assume major proportions under conditions where equipment is selected too small for the job or where poorly designed equipment is selected. The control of this item of operating expense requires that the proper size equipment be selected and that the design of the equipment selected be considered carefully. The rating methods as developed by the API give reliable methods of selecting the size of equipment required. The engineer still has the job of selecting between the various design and types of equipment.

The last general item of production expense is power cost. In case of an individual well unit this may require a comparison between purchased gas, fuel oil or electricity. In other cases where an adequate gas supply is present it offers no problem. In cases where gas is not available it may be necessary to make comparison between operating costs of oil and gas engines and between fuel costs of these engines. In cases where power is supplied from a central unit such as a generating plant, a central power, compressor station, or a central hydraulic power unit, it is necessary to make a charge for power to each well. Since use of a central plant generally affects the labor requirements, this type of operation requires careful consideration, and in making the power charges it is imperative that the charges made be reasonably accurate. It is easy in such cases to try to show savings which are not realized. Likewise, both methods should be carefully considered from this viewpoint since it is also easy to overlook a really important saving.

In addition to the above expenses there may be certain general expenses incidental to keeping the lease facilities in good repair. These general expenses must be prorated to the wells. These expenses would



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be repairs to general lease equipment such as tanks and lead lines, cost of treating-chemicals, repairs to treating heaters, etc.

Fixed Charges

The oil industry practice in equipment selection has been to generally forget about the fixed charges, particularly those concerned with the investment. In the case where payouts were short the investment item was not, within normal limits, considered an urgent factor. While it should be considered in any case, it becomes an important factor in the case of prorated wells where the time required to recover the investment is long.

Since equipment cannot last indefinitely it is necessary to provide from the revenue from the well a fund to replace the initial expenditure for the equipment. If, for example, the money is borrowed, it is necessary ultimately to repay this money or if it comes from the stockholder again it is ultimately necessary, in a stable company, to repay or be able to repay the initial investment. Depreciation as normally set up aims to accumulate the value of the equipment over the life it would operate economically. In the case of long-time projects such as power plants, depreciation rates have been worked out which cover the various types of equipment. For example, gas engines are assumed to have a life of 15 years, air compressors 15 to 20 years, pumps 15 years and electric motors 20 years.

Because of the technological developments, equipment may become obsolete within short periods. This obsolescence can come about by other equipment being made available having a lower operating cost, lower initial cost or having other advantages. In such cases equipment may be discarded long before it reaches the end of its operating life. The economic life in such instances being much less than the physical life. To take care of this contingency it is necessary either to increase the depreciation rate, that is, consider the equipment as having a shorter life, or to make a charge to take care of obsolescence. The steel rig front developed within the last 10 years represents a good example of where units having a lower cost and a lower operating expense have made it uneconomical under some conditions to use some second-hand rig fronts which previously would have been considered as good equipment.

The depreciating of equipment normally includes depreciation of the foundation and other unrecoverable expense. Since, however, the equipment may have a life longer than that required by one well this charge must be considered separately. Such expense as drilling expense and unrecoverable equipment expense must be depreciated or returned over the life of the well. The rate to be used on these items will, therefore, be based on the expected life of the well rather than on the life of the equipment; unless the life of the well is longer than the life of the equipment, in which case both would have the same life and same depreciation rate.

Most new investments are financed by borrowed capital. In the borrowing of this capital it is necessary to pay a price or interest rate for its loan in addition to returning the capital. This rate depends on the degree of risk involved and on the nature and apparent security of the investment. The rate may vary from five percent or lower to considerably higher values. This charge must, therefore, be made against the investment. In case the money comes from the stockholder it should pay to him a rate at least equal to this value, otherwise he could invest it some other place to a better advantage. It is frequently argued that the profit of the venture takes care of the price paid for capital. While this might be considered as true for the overall practice it does not serve as a rational basis for comparison of all the factors involved. Such a system would be similar to that employed by some small businesses in which the state of the business is determined by the net cash in the bank at any time. This is a satisfactory system so long as there is net cash accumulating. However, when things go the other way the system does not indicate wherein the difficulty lies or does not point out where other savings or profits might be realized.

Taxes on equipment is also an item which normally must be paid. It usually amounts to about 2 percent of the investment. Insurance is also an item which should be carried in order to protect the investment. It would cover loss due to fire, storm or other cause of loss of equipment not incident to normal wear. This is usually around 2 percent for utility companies.

Investment

Before considering further the application of the above items to equipment selection it will be well to consider in more detail the nature of the investment which is made in the equipment. The cost of such an installation can be divided roughly as follows:

Total Cost of Pumping Installation

Type of Expense	Type of Investment
A. Labor or contract cost.	Unrecoverable
B. Miscl. expense including Hauling Warehouse expense Supervision Freight	Unrecoverable
C. Purchase price for major equipment Pumping unit Engine and clutch Tubing Sucker rods Cooling equipment Starting equipment	Partially recoverable
D. Auxiliary equipment Water lines Gas line or oil tank Miscellaneous piping	Partially recoverable
E. Miscellaneous Material Foundation material Welding material	Unrecoverable

From the above table it can be seen that as soon as the installation is made a considerable portion of the investment becomes unrecoverable. When the equipment is no longer needed at this location, this part of the investment ceases to have value. The remainder of the investment, the recoverable items, has the possibility of future value. If the equipment is removed immediately and can be used it will have a book value equal to the initial cost less the cost of salvaging the equipment. The following table shows how the recoverable investment can be further broken down:

Recoverable Investment

Cost of recovering equipment	Net investment recoverable
	Investment to be depreciated over life of equipment
Investment to be depreciated on particular well	Net salvage value

The net investment recoverable will be less than

the value of the equipment by the cost of recovering the equipment. The difference between the total investment and the cost of recovering the equipment or investment will have to be depreciated over the life of the equipment. The cost of recovering the investment will have to be recovered over the life of the well. The net salvage value will be determined as indicated in the above table.

Normal Fixed Charges

In order to make it possible to arrive at a practical application of the foregoing principles it is necessary to make specific assumptions regarding the values. It will be assumed that the equipment has a physical life of 15 years. This is equivalent to making a depreciation charge of 6-2/3 percent per year on a straight line depreciation basis. Since there is a good chance of part of the equipment becoming obsolete before that time an allowance of 5 years reduction in life because of possible obsolescence would not be unreasonable. The percentage to be charged for obsolescence would be 3-1/3 percent. This would apply only to the recoverable expense as considered here. The depreciation of unrecoverable expense will be on the basis of the life of the well which will be assumed as 8 years in order that the average life would be different from the economic life of the equipment. The rate on unrecoverable or intangible expense would under these conditions be 12½ percent. Interest rate will be taken as an average of 6 percent, and taxes and insurance as a total of 3 percent.

The total annual charge on the recoverable expense would be 19 percent and on the intangible or unrecoverable expense would be 21½ percent. These percentages when added up are quite high, and may under many circumstances be much greater than the operating expense and accordingly should receive more attention since they are probably subject to greater control and manipulation than the operating expense.

Comparison Between Operating and Fixed Charges

In order to illustrate the questions involved, the following conditions are arbitrarily assumed. A lease with 5 wells is considered as being handled by one pumper. The pumper and miscellaneous labor cost is $300 per month, supervision is 33-1/3 percent of direct labor, repairs $700 per well per year, power cost zero due to free gas, and general lease supplies and maintenance cost is $700 per year. (Cost of salvaging any recoverable equipment is neglected.) If the individual wells are assumed to cost $39,000 per each which is divided as follows:

Drilling contract or cost and unrecoverable expense	$20,000
Casing and other Control Equipment (recoverable)	7,000
Pumping equipment (recoverable)	9,000
Pumping equipment (unrecoverable)	3,000
Total cost	$39,000

The total recoverable investment for a 5-well lease will be $80,000 and the unrecoverable, $115,000.

Using the values given above for annual charges in the investment we would have:

Annual charge on recoverable investment (19% of $80,000)	$15,200
Annual charge on unrecoverable investment (21½% of $115,000)	24,700
Total annual charge on investment	$39,900

The total annual operating expense of this lease would be as follows:

Pumper and miscellaneous labor	$ 3,600
Supervision (33-1/3% of above item)	1,200
Maintenance (700 × 5)	3,500
Power cost	0
General lease supplies	700
Total operating expense	$ 9,000
Total annual charge ($39,900 plus $9,000)	48,900

For such a lease the daily production would have to be 27 barrels per day per well (at $1.00 per barrel crude price) to pay out the investment, pay the normal charges on the investment and to pay the operating charges. In addition to this daily production the well would have to produce an amount necessary to pay for leasing, rentals, exploratory work and carry the average cost of dry holes which are encountered in the location and development of oil fields.

It can be seen from the above analysis that the fixed charges or charges on the investment are large as compared with the operating expense. If it is assumed that the drilling expense and investment for casing cannot be changed, any control which might be exercised would have to be limited to the pumping equipment, pumper labor and maintenance. Each of these items is closely tied up with the equipment selection problem.

For the above example the following are the annual charges per well per year:

Fixed charges per year $\frac{\$39,900}{5}$	$7,980
Labor per well $= \frac{\$3600}{5}$	$ 720
Maintenance per well	700
Other expense $\frac{\$1200 + \$700}{5}$	380
Total annual charge per well	$9,780

In this case investment is seen to be a major item. Major reduction in investment would therefore permit a considerable increase in operation expense without affecting the overall result. Any generalization of this problem is, of course, difficult because each case presents a different problem and must be considered separately.

Conclusions

The general accounting methods in use place their emphasis on operating expense. The fixed charges or the investment charges are not given their proper attention so that in many cases the operator is unnecessarily penalizing himself with a high investment. The rapid introduction of technological developments further makes it hazardous to increase the investment beyond the average if not the minimum requirement. Unless accounting methods take into account the fixed charges a rational selection of equipment, giving proper attention to investment and flexibility is not possible.

Inasmuch as equipment selection depends so much on reservoir performance that phase of the problem will be analyzed (in Part 2) before showing further how the application of the above principles affects equipment selection.

This is the first of a series of articles. The second will appear in an early issue.

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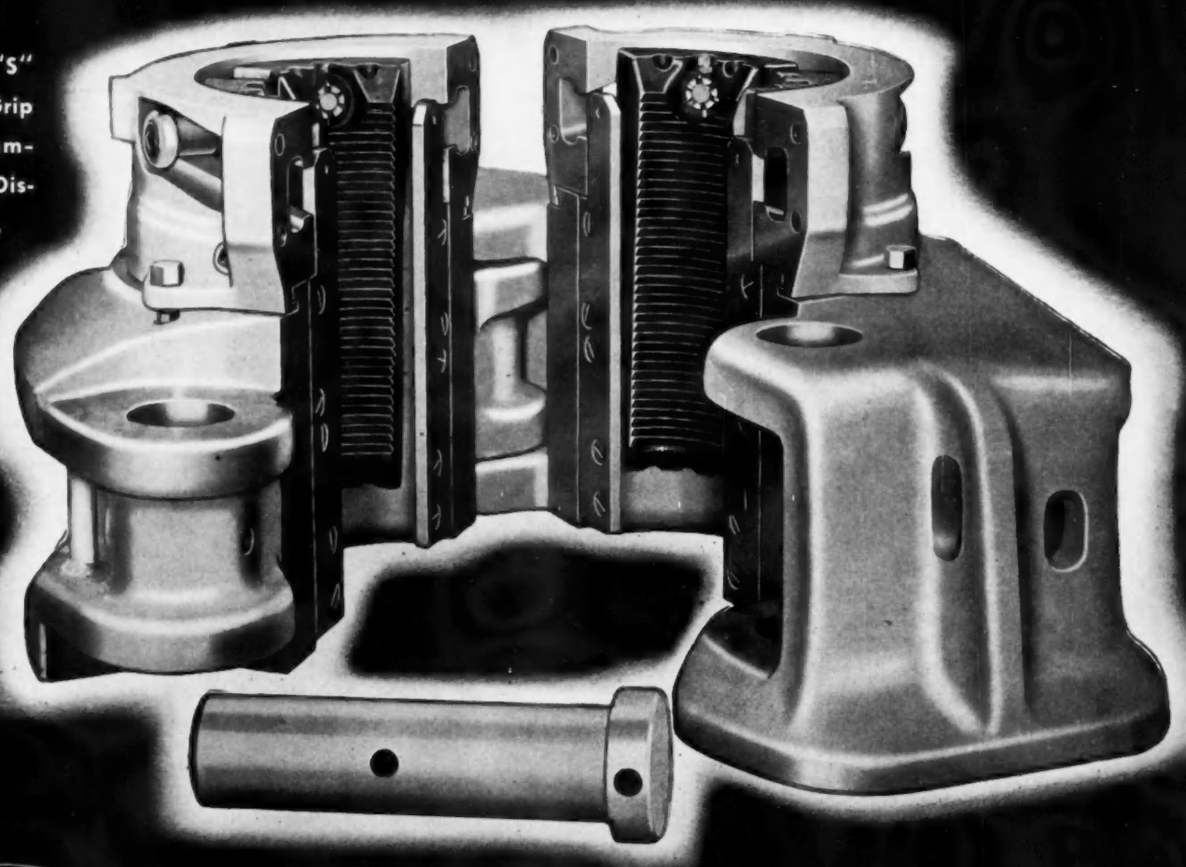

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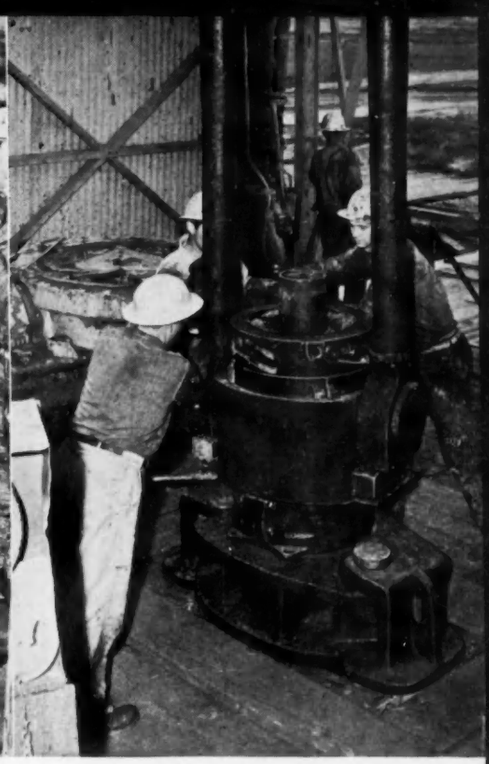
Releasing the Cam-Operated Slips with the Slip Shifter Rod of an Ideal Type "S" Hinged Automatic Grip Spider.



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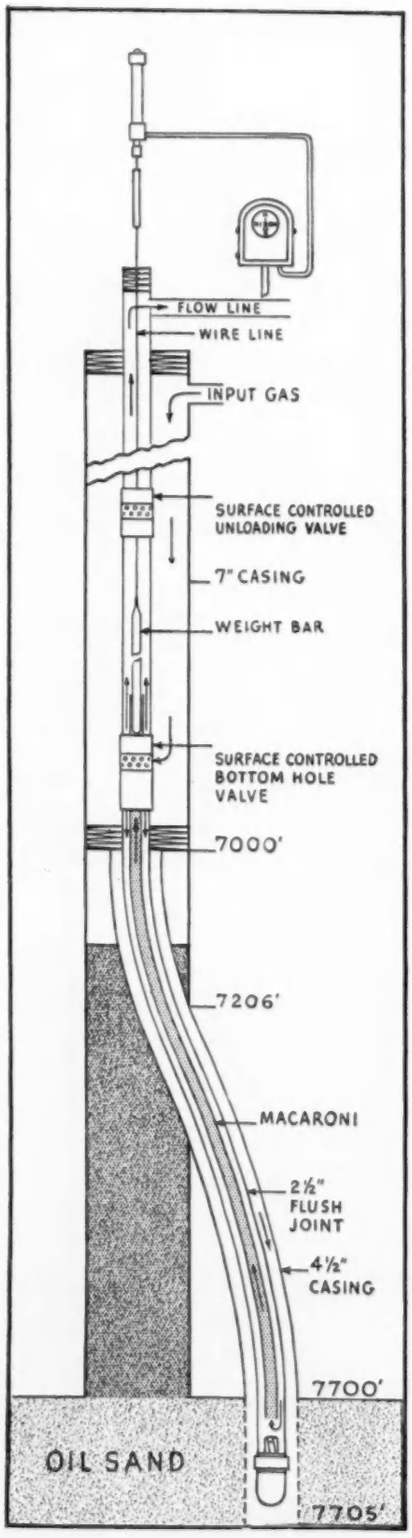
Side-tracked Well Saved By Unusual Gas-lift Installation



By GORDON B. NICHOLSON, Staff Writer

FACED with the prospect of abandoning his Hogg No. 1 in the Eureka Heights field near Houston because of the combination of a thin sand section, low bottom-hole pressures, and an unusually crooked hole, Jack W. Frazier salvaged his well and solved a production difficulty by the use of a special gas-lift arrangement.

Drilled originally to 7705 feet into a thin, 5-foot low-pressure sand section, an accident resulted in a fishing job and the subsequent loss of 500 feet of drill pipe in the hole. Sidetracked at 7206 feet, a window was milled in the casing and a new hole drilled to the original depth. A liner of 4-inch flush-joint drill pipe was set from 1016 feet to 7705 feet and the well was completed at that depth. The low bottom-hole pressure resulted in failure to flow, and a severe dog-leg, formed at the time of sidetracking, almost eliminated the feasibility of running lifting equipment to bottom as required by the low fluid level in the well.

A decision was reached to install flow valves, but the low pressure again became a stumbling block. The input pressure required to lift the fluid from bottom, when applied to the casing from a nearby gas well, exceeded the natural formation pressure, preventing operation in this manner.

The operator saw the possibility of having to abandon his well. At the propitious moment, however, the engineers devised a gas-lift application to produce the fluid from bottom without applying the full amount of casing pressure on the formation, and, at the same time, avoiding entrance into the small diameter liner or the crooked-hole area with the lifting equipment. This development proved to be the salvation of the well.

A hook-wall packer was set above the liner at 7000 feet, and 700 feet of 2½-inch flush joint tubing was extended close to bottom with a standing valve at the lower end. The first surface-controlled flow valve was placed just above the packer, and from this valve was run a string of approximately 700 feet of macaroni tubing inside the 2½-inch and reaching a point near bottom. Gas in the annular space between the macaroni and the 2½-inch tubing helps lift the fluid from bottom through the macaroni to the first flow valve. Gas put into the casing from the gas well and maintained at 600 pounds pressure lifts the fluid from this level to the surface, the pressure being confined in the space above the packer and leaving largely "pressure-free" the producing sands below. The installation carefully avoids the use of moving parts in the crooked, small-hole section as a maintenance and safety factor, but it observes, at the same time, the necessity for producing from bottom.

When first placed on production, the well cleaned itself of mud and water for a period of several days before starting to make clean oil. The initial flow was small, but, as it cleaned, began to increase until the well now easily makes the field allowable. Nearly seven months in operation, the gas lift used in this manner has converted a problem well into a good producer.

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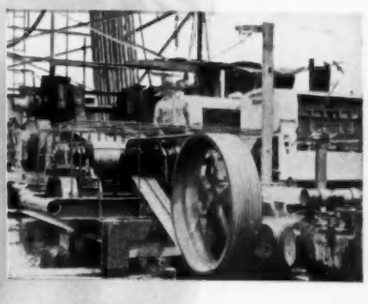

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Well Spacing in Oklahoma Under State Orders

By FOSTER MORRELL
Deputy Supervisor, Oil & Gas Operations, United States Geological Survey

ON APRIL 22, 1935, the Oklahoma legislature approved the first "state well spacing act," expressly authorizing the establishment of well spacing or drilling units of uniform and specified size for any common source of supply or "pool." From that date to December 31, 1940, the Oklahoma Corporation Commission issued 66 well spacing orders, 1 for 5-acre units, 39 for 10-acre units, 10 for 20-acre units in triangular form, 6 for 20-acre units in rectangular form, and 5 for 40-acre units for oil development and 5 for 40-acre units for gas development.

The Oklahoma spacing act provides that well-spacing units shall not exceed 10 acres in size unless agreed to by at least 80 percent of the lessees of record at the time the first well was completed and owning 80 percent or more of the acreage in the area of the common source of supply, but in no event is the spacing to exceed 40 acres. Well spacing orders in Oklahoma are issued entirely independent from production control. The act provides a form of compulsory unitization of royalty interest and a form of permissive unitization of working interests within each established well-spacing unit. The well-spacing act of 1935 has been upheld twice by the Supreme Court of Oklahoma and once by the United States Supreme Court.

The accompanying article, which is published by permission of The Director of the United States Geological Survey, reviews well-spacing practices in Oklahoma and shows what the control of well spacing by state regulation may do.

THE problem of proper spacing of oil and gas wells has long been the subject of wide discussions and at times intense controversies. At first it involved only the question of offset rights or the distance a well was spaced from property lines. Later, consideration was given to the effect of well spacing in the amount of oil recovered. The closest possible spacing, theoretically, would produce the greatest ultimate recovery. For many years the only limitations on close well spacing were economic factors based on the productive characteristics and depths of the producing formations. Correlative rights were given scant consideration under the early "law of capture" other than meeting line offset by line offset. Early cases of over-production and waste in some fields in Oklahoma, particularly the Glenn pool opened in 1905, presented problems for which the state was not prepared. Inequities occurred when certain producers had their own outlet and marketing facilities. This caused lessees, who had no market outlet but who had to produce into both open and closed storage to protect against drainage, to appeal to the state bodies and the courts for protection.

Earliest state laws dealt solely with the simplest form of gas waste. Legislative action in 1909 provided for common purchasers of oil and ratable takings. The 1913 Legislature of Oklahoma passed an act relating to the production and transportation of gas. A form of oil proration by pipe line companies had been attempted but failed, and in 1914, a year after the prolific Healdton and Cushing fields were discovered, the idea of prorating production on a percentage of potential basis was first applied to oil in an order of the Oklahoma Corporation Commission under the authority of the common-purchaser statute by requiring purchasers to take ratably "in proportion to the average daily production."

The first comprehensive legislation was the act of February 11, 1915, which embodied three essential features, namely (a) a broadened definition of waste to include economic waste, underground waste, and waste incident to production in excess of reasonable market demand, (b) limitation of production to reasonable market demand, and (c) a standard of proration of the pool allowable, each well to be allowed to produce the percentage that its potential bore to the total potential of all wells in the field. Oklahoma was the first state to incorporate this or any similar plan in statutory form. No other state followed its lead in this specific respect until 16 years later when, in 1931, Kansas enacted substantially the same law. The next year the Texas legislature adopted a limitation of production to market demand and still later New Mexico, Louisiana, and more recently Arkansas followed, although each of them in somewhat different form and detail.

Spacing Problems in Oklahoma City Field

Control of well spacing in Oklahoma continued only incidental to orders and actions based on waste and production control provisions of law. In December, 1928, the Oklahoma City field was discovered. Forty-acre spacing had been instituted by the company which drilled the discovery well, and a number of wells around it were drilled on that pattern; but, when the property of one important company was closely approached by wells, it refused to conform to such spacing. Thereafter new wells were spaced 1 well to each 10 acres until early in 1930, when development encroached upon the corporate limits of Oklahoma City. There was extremely close well spacing in the platted subdivision areas, some wells being on tracts as small as 50 feet by 140 feet or 0.16 acres. The Corporation Commission did nothing to regulate the spacing of wells here; whether it could have done

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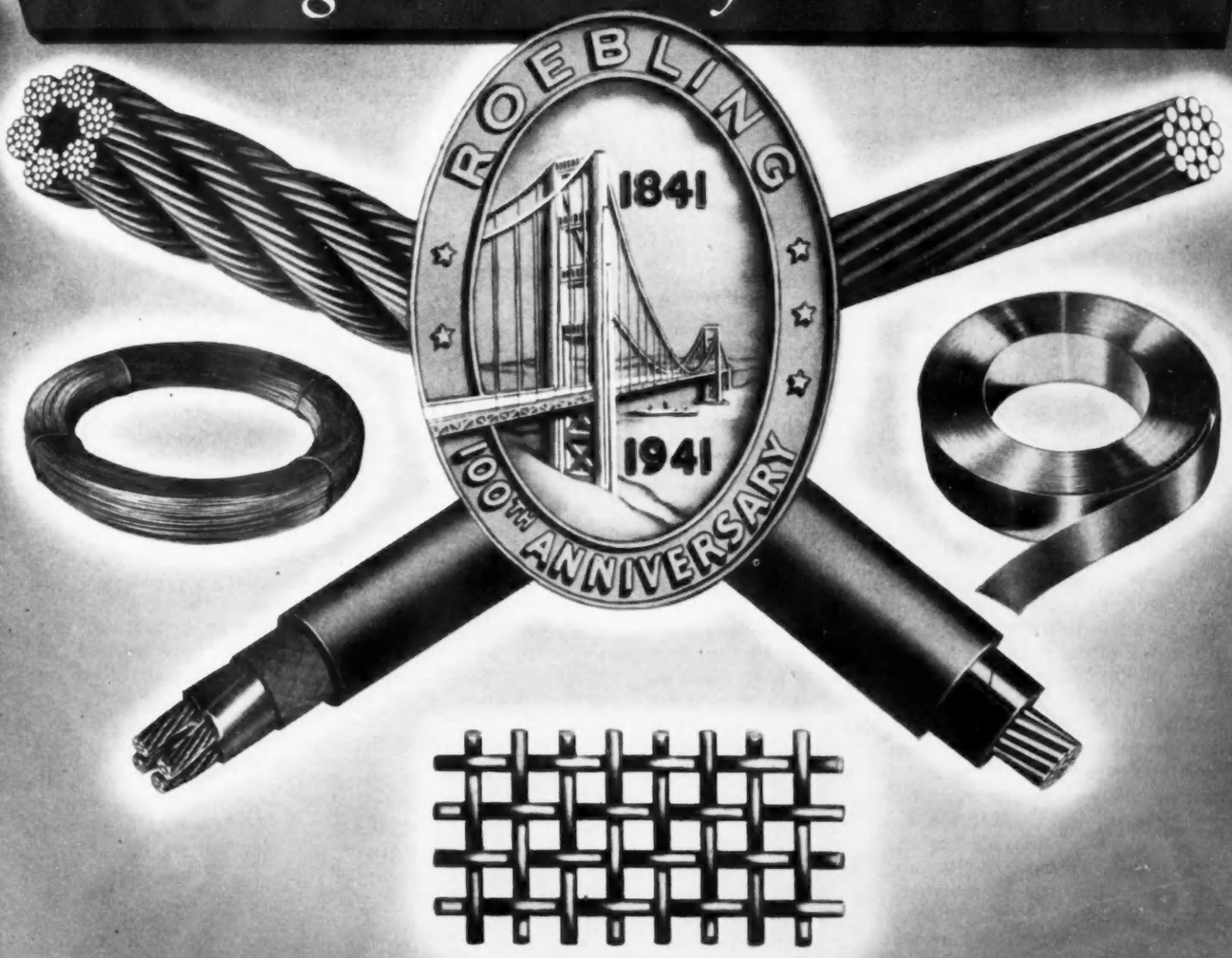

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so under statute as it then existed was not determined. No other major pool in the state had presented the problem of unusally close well spacing, and, unlike today, the economic difficulties involved in oil recovery had not brought about any general consideration of that subject. The city council of Oklahoma City enacted an ordinance prohibiting the drilling of wells within the corporate limits, except within prescribed areas and there limited to one well to a city block. The city blocks are from 2½ to 3 acres in size. The ordinance provided for unitizing the working and royalty interests on the ratio of the area of each lot to the area of the block. This ordinance was based on the police power of the city and was intended to protect the safety and comfort of its citizens and properties and not as a like state regulation would have been, to equalize oil recovery opportunities among property owners and to work recovery economies. The validity of this ordinance was sustained by the Oklahoma Supreme Court. Its observance resulted in wider spacing inside than had taken place in the platted additions outside of the corporate limits.

During the period of development of the Oklahoma City field and the hectic days of severe restriction on production from 1930 through 1935, the wells were prorated on a productive capacity or time basis limited only to the field production that could be produced without waste and no recognition was given to the differing acreage of tracts on which the wells were located.

More Effective Proration Legislation in 1933

A new conservation act was passed by the 1933 legislature of Oklahoma; the primary object of which was to provide for effective enforcement. There was not much effort made to deal with phases of the then more modern conception of oil conservation, such as well spacing or the unitization of pools, or areas within pools. The well potential basis of proration was preserved with some qualifications, including a prohibition against reducing the allowable production of any well in the state below 25 barrels per day or below its full production if it should be incapable of producing 25 barrels per day, a provision that all or any two or more wells on any lease in any prorated pool might be regarded and treated as an entirety instead of prorating each well separately when that could be done without waste or injury or injustice to others in the pool, and a provision for charging overproduction from any prorated well to the lease instead of the well itself whenever that could be done without injustice or injury to offset well owners.

The determination of bottom-hole static pressures as a step in the gaging of wells as a basis for proration was required in a number of proration orders of the Oklahoma Corporation Commission, beginning with one issued in 1934 involving the Fitts pool. Also, the determination of gas/oil ratios was required by some orders.

Some inequalities and wasteful results of prorating by the single standard of well potentials, a basis which was thought to be the most reasonable one in the earlier days, are now being seen by some of the Oklahoma producers. Since proration seems to be a permanent institution and because of the keenness of competition, many operators, large and small, are leaning toward the adoption of a fairer basis for a just distribution of the recoverable deposits.

First Well-Spacing Orders

Although no mention of well spacing was made in the 1933 statute, the corporation commission, under the very broad general powers conferred by that act, took an important step towards elimination of inequalities due to irregular spacing of wells by issuing several orders establishing well-spacing programs. The experience in the Oklahoma City field, where many town-lot operators had advantages, were still fresh in mind.

On November 8, 1933, the commission issued an order relating to the Quinton gas field, Pittsburg County, wherein it was found from the evidence presented at a hearing that a 40-acre well-spacing program should be adopted for the pool; and on December 21, 1934, the commission issued an order for 10-acre well spacing in the Fitts pool, Pontotoc County. In each order it was provided that in arriving at the allowable production of any well drilled on less than the well-spacing unit provided therein consideration would be given to the acreage of well spacing in the pool.

Well-Spacing Act of 1935

Well spacing or drilling units were expressly authorized to be established by an act of the Oklahoma Legislature (H.B. 187) approved April 22, 1935, Chapter 59, Session Laws of Oklahoma, 1935. The act is commonly referred to as the "Well-Spacing Act." This was a real step forward and the first state law of this nature. However, the legislature did not enact the measure as originally proposed, and there was some disappointment that the authority of the commission was not made broader.

[Some of the important provisions of the 1935 Well-Spacing Act are discussed in an accompanying appendix, and indicate the manner and extent to which the spacing of wells may be controlled or regulated under state law.]

Well-Spacing Orders

Since approval of the Well-Spacing Act on April 22, 1935, to December 31, 1940, 66 well-spacing orders have been issued by the Corporation Commission of Oklahoma. Table 1 shows the number of orders and size of well-spacing units established by years, also the number of new oil pools discovered in Oklahoma during those years.

It will be noted that most of the orders were issued during the years 1938, 1939, and 1940. This may be attributed in part at least to the upholding of the well-spacing act early in 1938 by the Oklahoma Supreme Court. During the last three years the majority of new oil pools discovered in Oklahoma have been developed under well-spacing patterns approved by the Corporation Commission.

In reviewing the well-spacing orders, detailed information on each order was tabulated to see if there might be some relationship between the several sizes and shapes of well-spacing units in effect and the area or depth of the producing formation.

It will be noted from Table 2 that the average area of 10-acre well-spacing units is considerably greater than that of either 20-acre or 40-acre units. Also that, in general, the larger the spacing unit, the greater is the depth of the producing formation.

Informal discussions with company engineers indicate a wide divergence of opinion as to preferred size and shape of well-spacing units. The same producing formations at approximately the same depths

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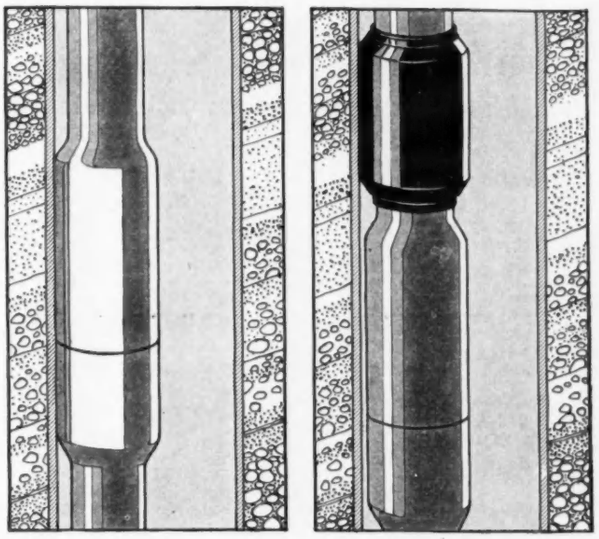

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Oklahoma Well Spacing Upheld by High Courts

THE Oklahoma Well Spacing Act of 1935 has been upheld twice by the Supreme Court of Oklahoma and once by the United States Supreme Court.

The opinion of the Supreme Court of Oklahoma in the Patterson vs. Stanolind suit contained some very pertinent statements relative to the legal and economic aspects of well spacing. The syllabus of that decision states that:

"The police power of the state includes the protection of the correlative rights of owners in a common source of oil and gas supply, and this power may be exercised by regulating the drilling of wells into said common source of supply and distributing the production thereof among the owners of mineral rights in land overlying said common source of supply as provided . . ." the Act of 1935, without violating the pertinent sections of the constitution of Oklahoma or the United States, that the well-spacing act "does not constitute an unlawful delegation of legislative power to the corporation commission," and "is not invalid because of indefiniteness and uncertainty." The opinion contains the following pertinent statements:

"The restriction of drilling by the spacing of wells seems to be a much more feasible and effective method of securing a just distribution for such owners than restrictions upon production after same has already commenced, for it tends to eliminate many distinct faults apparent in such regulations.

"The 'wasteful necessity of drilling offset wells' is another vice which is minimized by such restrictions on drilling. One of the essentials to the preservation of the common source of supply or the prevention of its waste is the preservation of the reservoir energy necessary to production therefrom by the natural process of flowing. This has been recognized by the courts and the power of the state to prevent the waste of said reservoir energy is beyond successful contradiction.

"As we view it the property here involved has not been taken or confiscated; its use has merely been restricted and qualified.

"Though we believe in the principle that an act whose enforcement is trusted to any agency of the government should be definite and certain enough to let the agency know what the legislature intended to provide for and how the legislative will is to be carried out in the administration and enforcement of the act, still we must also recognize that there are certain subjects of legislation in which the application of this principle is necessarily limited. In our estimation, well spacing is such a subject. We believe it would be impossible for the legislature to lay down a definite standard by which it could be determined correctly, just when and under what conditions an oil-producing area should be divided into drilling units and what size and shape the units should be. The best manner of well spacing or a criterion by which this might be arrived at, could not be anticipated or prescribed in advance of the opening of an oil field because of the difference between the conditions in one field and those in another and the variability of the effect which such conditions have upon the objects to be obtained. The impossibility of fixing a definite standard for the administration and enforcement of oil and gas conservation measures has been given great weight in the judicial determinations of their validity in other jurisdictions.

"The well-spacing sections of the statute in question are obviously designed to prevent waste by limiting the number of wells drilled into the common source of supply to a number of wells which will enable the recovery of the most oil from said supply."

are being developed under 10-acre, 20-acre, and 40-acre spacing. Slightly less than half of the total number of spacing units of 20 and 40 acres are for the development of the Hunton lime. The production from that formation is notably "flashy" and many operators have found it uneconomical to drill that formation on a 10-acre spacing because of low recoveries per acre.

Only one exception to drilling in the approximate center of a well-spacing unit has been granted by the commission under the authority of the provision in the Act of 1935 relating to any unit located on the edge of a common source of supply and adjacent to a producing unit. Order No. 14,161, issued January 27, 1941, granted applicants permission to drill a well in the Dill pool, Okfuskee County, at a point other than the center of a spacing unit, but provided that production from the well shall be restricted in the following manner: A 10-acre square shall be drawn with the point where the well is actually drilled as the exact center; the proportion of the area of that square, owned by the applicants, shall be applied to determine the allowable production of the well under proration, and, in the absence of proration, said proportion shall apply to the potential production of the well. The well was actually drilled 165 feet from the property line and under the formula provided by the order production was limited to 75 percent of the usual 10-acre well allowable in the pool. The same operator has now applied for an exception for a second well. More strenuous objections are being raised now than before by other operators in the pool. Sufficient interest was taken that a state-wide hearing on the general matter of exceptions for edge well-spacing units was held by the Corporation Commission on March 25, 1941.

Court Action on Spacing Orders

Two well-spacing orders have been taken to the Supreme Court of Oklahoma, and one of these to the United States Supreme Court. In each instance the validity of the statute and the order was sustained. As these cases present interesting circumstances similar to those involved in many other orders and tend to indicate the extent to which control of correlative rights may be had under well-spacing orders sanctioned by law and the courts, they will be discussed in some detail.

Russell B. Patterson attacked in court the well-spacing Order No. 10,386, issued June 18, 1936, covering the North Wellston area in Lincoln County. This was a new pool having only one well completed to a depth of about 5150 feet in the center of a 10-acre tract. The commission found it was in the interest of conservation and of the rights of

Control and Economy meet through SIMPLICITY of design

SIMPLICITY is conducive to flexibility of equipment, so necessary to provide for control and economy under usual, unusual, and unexpected conditions. Simplicity is a prime requisite for long life.

A good example of the progress made through simplifying a product is shown by the two illustrations on this page. Both are GRAY products. Figure 1 is one of the Gray Christmas Trees of a few years back, in its day a splendid assembly that rendered good service. Figure 2 shows a new Gray Christmas Tree, more compact, containing new improved features not available in the older assembly — a simplified, more flexible product that will render better service over the years.

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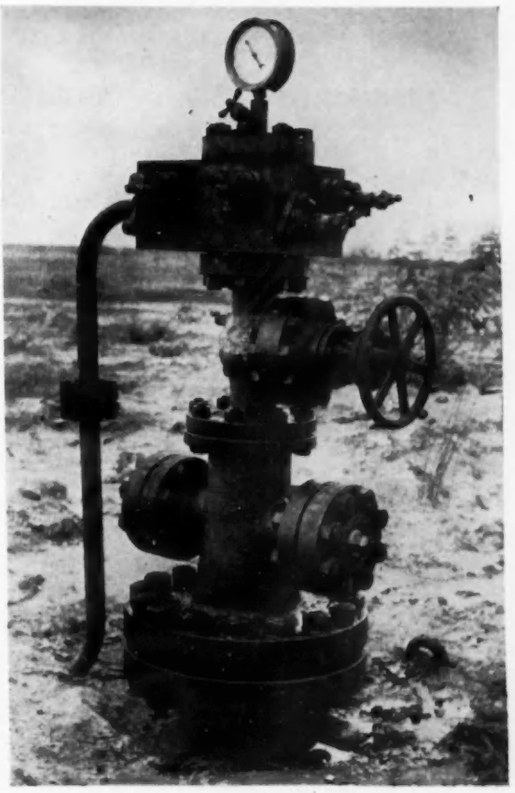

FIG. 2

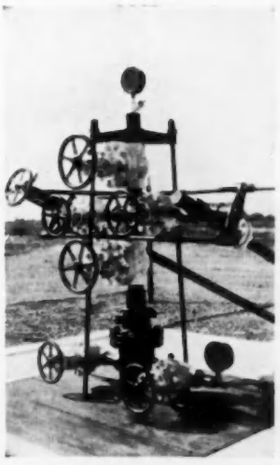

FIG. 1

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lease holders and royalty owners in the area to establish well-spacing or drilling units of 10 acres each of uniform size for the common source of supply and provided that each well drilled shall be located in the approximate center of each 10-acre drilling unit.

The discovery well had been drilled in the center of a 10-acre drilling or well-spacing unit, in which Patterson owned a 1/16 of the mineral interest in only the north 6¼ acres. The well was located on the portion of the unit in which Patterson owned a mineral interest. Patterson contended that he was entitled to 1/16 of the total royalty accruing from all the production from the well and should not be required to share the royalty with the owners of mineral interests in the south 3¾ of the well-spacing unit in question.

Patterson brought suit in the District Court of Tulsa County against the lessees, Stanolind Oil & Gas Company and Amerada Petroleum Corporation, to recover 1/16 of the entire proceeds of the sale of the royalty oil produced from the well, challenging the validity, under provisions of the Constitutions of Oklahoma and the United States, of the Well-Spacing Act and the order made thereunder by the Corporation Commission. The trial court, and, on appeal, the Supreme Court of Oklahoma, in an interesting opinion (Patterson vs. Stanolind (1938) (182 Okla. 255), (77 Pac. (2) 83), sustained the validity of the statute and the order. The case was taken to the United States Supreme Court, which held (305 U. S. 376) that the state court applied well settled principles in denying plaintiff's contention under the fourteenth amendment of the United States Constitution and under the contract clause, and in holding that the argument, that the regulatory provisions of the statute authorizing the commission to make its order fixing the drilling unit were void for indefiniteness, was without merit. The appeal was dismissed as the plantiff failed to raise a substantial federal question.

[The opinion of the Supreme Court of Oklahoma in the Patterson case is of such importance and interest that a few statements contained therein are published in an appendix accompanying this article.]

A well-spacing and drilling unit Order No. 12,474, issued July 22, 1938, covered 12 sections of land designated as the Noble pool, in Cleveland and McClain Counties. The order issued, after a hearing, upon the application of W. A. Delaney, Jr., who, with associates, on May 22, 1938, completed a well to approximately 7800 feet with oil production from the Wilcox sand. The commission found from the evidence presented that well-spacing units of 20 acres in size should be established in the pool, that in establishing the 20-acre well-spacing unit, each 40-acre subdivision should be divided into two equal parts by drawing a line from the northeast corner of the subdivision to the southwest corner thereof, thereby establishing 20-acre units in triangular form, and that each well drilled therein should be located in the approximate center of the unit. It was stated that 80 percent or more of the lessees of record as of the date of the bringing in of the first well in the common source of supply and owning at least 80 percent of all the acreage embraced within the probable producing area as described, had agreed to the establishment of 20-acre drilling units. Provision was made that in the event a producing well is completed in an area owned by two or more persons, firms, or corporations, the rights of the lease and royalty owners and others interested shall be controlled, determined and adjusted by the provisions of the Act of 1935.

E. V. Croxton et al, appealed from the order of the Corporation Commission to the Supreme Court of Oklahoma. The protestants attacked the order under two principal propositions, the first was that the evidence introduced before the commission did not show the area in question to be a proper one for 20-acre well spacing under the statutory prerequisite for acceptance of a unit larger than 10 acres by 80 percent or more of the lessees of record and owning at least 80 percent of the probable producing acreage in the pool. The second proposition was that the findings, order, and actions of the commission were contrary to law, were in violation of the United States and Oklahoma constitutions and were discriminatory and confiscatory. The court in its opinion (1939) (186 Okla. 249, 97 P. 2d 11) denied all these contentions and affirmed the order of the Corporation Commission.

Two outstanding points, not previously considered by the courts, were raised in the Croxton case. The protestants raised the question of the rights of "land-owners and owners of mineral rights" within the area, and contended that the commission erred in not considering the owners of royalty in determining whether 80 percent had consented to the plan. The court held that under the provisions of the Act of 1935 those who must consent to the establishment of drilling units of more than 10 acres and not more than 40 acres, is necessarily limited, under the doctrine of express mention and implied exclusion, to 80 percent of "the lessees of record" to the exclusion of all others, including the owners of royalty and unleased mineral rights. The protestants asserted that the triangular spacing was contrary to the plan of well spacing contemplated in the act; also, that it would not protect the correlative rights of the owners in the pool. It was argued that a well drilled in the center of a triangular tract would either drain oil from under adjoining units and thus drain the oil from under land in which the owners of the unit have no title, or it would fail to drain the oil from the corners of the triangular tract. This was based on the proposition that a well will ordinarily drain the oil from a more or less equal radius from around the well. It was recognized that nowhere in the act was any attempt made to specify the shape of the units, but it was argued that since a square unit would more nearly conform to the circular shape of the ordinary drainage area, as well as to geographical property boundaries, that this must have been the type of unit intended. The court stated that in the absence of any such express provision it was not within the province of the court to formulate one; especially, in view of the specific vesting of the commission with the authority to determine what shape the units shall be. The court also held that assuming no well in the center of a triangular unit will drain all the oil under that unit and assuming that a portion of its production will be derived from adjoining units, it would not necessarily follow "that together said wells will not adequately drain the Noble pool and enable a just distribution of the oil therein between the owners of the various units."

A further contention that the right of the commission to adjudicate the cost of drilling a well on

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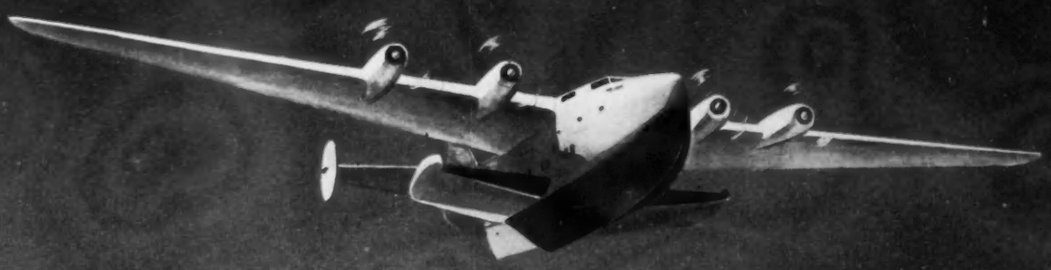

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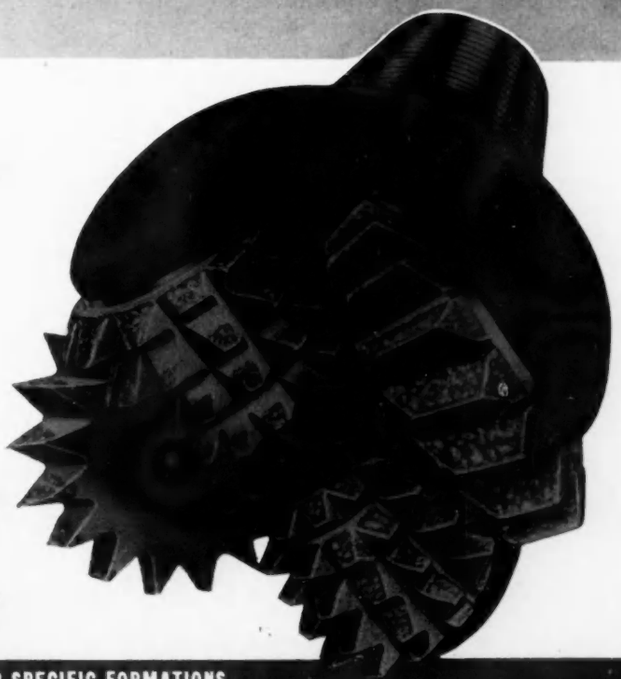

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the majority acreage where two or more separately-owned tracts lie within a single drilling unit was an unconstitutional delegation of judicial power over private controversies, was denied, and the delegation of administrative powers involving discretion of a quasi-judicial character in the act was upheld.

Current Trends in Well-Spacing

The current trend of the industry is to wider spacing of wells. The continued reduction in well allowables under proration statutes of the various oil-producing states has accelerated attention being given to well spacing because of the economic problems involved. It is generally recognized that in Oklahoma more spacing units would be established for 20 and 40 acres if it were not for the present statutory limitation requiring concurrence of at least 80 percent of the operators holding 80 percent or more of the acreage in the pool-spacing area. New legislation is now being contemplated to reduce this limitation on establishing wider spacing in Oklahoma.

The subject of well spacing has been discussed in numerous articles in the various trade journals during the past few years. Engineering and technical societies have committees or subcomittees appointed to study the problem. A number of formulas have been proposed for deriving the optimum spacing of wells under given circumstances. To date no single method or formula has been considered acceptable or satisfactory for general use. Stress is given in many articles to the fact that further economies in development and production can best be accomplished through wider well spacing and unit operation. The administrative attention being given the problem is indicated by the high percentage of recent published articles by high officials of several major companies. It is no longer an engineering problem for maximum recovery alone. No attempt is made in this paper to discuss the merits and advantages of the various size spacing units.

The orders of the Corporation Commission establishing well-spacing units state that, among other

TABLE 1

Number of Orders and Size of Well-Spacing Units Established in Oklahoma by Years

YEAR	OIL					GAS	Total
	5 Acres	10 Acres	20 Acres (Triangular)	20 Acres (Rectangular)	40 Acres	40 Acres	
1935	..	3	..	..	..	..	3
1936	..	7	..	..	..	..	7
1937	..	1	..	..	..	1	2
1938	1	11	1	1	1	2	17
1939	..	11	3	4	2	..	20
1940	..	6	6	1	2	2	17
Total	1	39	10	6	5	5	66

Some Important Provisions of the Oklahoma Well Spacing Act

SOME of the important provisions of the Oklahoma Well Spacing Act are discussed in following paragraphs, and indicate the manner and extent to which the spacing of wells may be controlled or regulated under state law.

The act provided "for the spacing of oil wells in the common sources of oil supply in this state, more effectively preventing waste and adjusting the correlative rights of producers of oil and royalty owners in such common sources of supply, and for other purposes."

It is apparent that the framers of the Act of 1935 definitely had in mind the benefits of the conservation and protection of reservoir energy. This is clearly shown by the inclusion in the definition of the term "waste" in the new act, in addition to the ordinary meanings of the term and to the meanings given in prior acts, the following as applied to production of oil: "The use of reservoir energy for oil-producing purposes by means or methods that unreasonably interfere with obtaining from the common source of supply the largest ultimate recovery of oil," and the following as applied to the use of gas in the operation of oil wells: "In such quantities or in such manner as unreasonably to reduce reservoir pressures, or unreasonably diminish the quantity of oil that ultimately might be recovered from the common source of supply." Provision is made for restricting the taking of oil to the proportion that can be produced without waste.

Common Source of Supply and Pool Defined

The terms "common source of supply" and "pool" are used synonymously in the general orders, rules, and regulations of the Oklahoma Corporation Commission and are defined as comprising and including the area which is underlaid or appears to be underlaid by a common accumulation of oil or gas. Where an area is or appears to be underlaid by more than one common accumulation of oil or gas separated from each other by strata of earth and not connected with eacn other, the area of each such common accumulation, is deemed to be a separate common source of supply or pool. In Oklahoma the term "field" means the general area which is underlaid or appears to be underlaid by at least one pool. When only one underground reservoir is involved the term "field" and "pool" mean the same thing; however, "field" unlike "pool" may relate to two or more pools.

Well Spacing or Drilling Unit Authorized

To prevent or to assist in preventing the various types of waste, the Act of 1935 authorized the corporation commission to establish well-spacing or drilling units of uniform and specified size and shape for any common source of supply discovered in Oklahoma after the effective date of the act. In oil fields already developed or substantially drilled at the time of the passage of the act, well-spacing units cannot be established unless unanimously agreed to by all operators in the field.

Well-Spacing Units

The act specifies that the well-spacing units should not exceed 10 acres in size, unless 80 percent or more of the lessees of record as of the date of bringing in the first well and owning at least 80 percent of all the acreage embraced within the probable producing area of the common source of supply agree to a larger unit, but in no event to exceed 40 acres.

Determination of Well-Spacing Units

In establishing a well-spacing unit, the acreage to be included and the shape of the unit is deter-

mined by the corporation commission from evidence introduced at a hearing held after at least 10 days notice. The following facts, among other things to be considered, are listed as being material: (1) The lands embraced in the common source of supply as then defined; (2) the plan of well spacing then being employed; (3) the depth of any producing wells already completed; (4) the thickness, porosity and permeability of the producing sand; (5) the nature and character of the reservoir energy; (6) the formations encountered in any well then drilling; (7) cores of the producing formation; (8) the history and producing characteristics of other wells producing from the same or similar formations; and (9) any other available geological or scientific data of value pertaining to the source of supply.

Well-spacing orders provide that a legal subdivision of 40 or 160 acres shall be divided into prescribed sized units in the form of a square or, as hereinafter shown, a triangle, and that the well should be located as near as may be to the center of the unit. The act provides that in the case of a unit on the edge of a common source of supply, the well may be drilled at other than the approximate center of the unit after due application, notice and hearing.

Unitization Within Well-Spacing Units

The act provides for a form of "compulsory unitization" as to royalty owners within a well-spacing unit, the applicable provision reading, "In the event a producing well, or wells, is completed upon a unit where there are two or more separately-owned tracts, any royalty owner, or group of royalty owners, holding the royalty interest under a separately-owned tract, shall share in ⅛ of all the production from the well or wells drilled within the unit in the proportion that the acreage of their separately-owned tract bears to the entire acreage of the unit." Any lease royalty in excess of ⅛ and any oil payment or other obligation of the lessee is required to be sustained and paid by the lessee of the separately-owned tract against which it is imposed.

With respect to the lessee or other person having the right to drill on a unit, only "permissive unitization" is provided for where there are two or more separately-owned tracts embraced within an established well-spacing unit. Each lessee has the right to drill his own tract, but the allowable production from such tract is restricted to the proportion of its daily capacity as the acreage of the tract bears to the entire acreage of the well-spacing unit.

The act goes into considerable detail with respect to arrangements between lessees for drilling separately-owned tracts within a well-spacing unit. Essentially, the act provides that when a lessee owning a majority of the acreage in a well-spacing unit elects to drill on his acreage, he shall give the other lessees in the unit fifteen days written notice of his intention to drill and of the estimated cost of drilling, equipping and completing the well. By contributing within the 15-day period to the party intending to drill, the proportion of the estimated cost of the well based on the percentage of the acreage of the contributor to the total acreage of the lessees participating in the cost of the well, a lessee of other acreage in the well-spacing unit becomes entitled to a corresponding share of the ⅞ of all production from the well and to become owner of a like proportionate share of the equipment in and at the well. A lessee so contributing cannot drill on his separate acreage in the unit.

If a potential contributor is not satisfied with the estimate or financial ability of the party proposing to drill the well, and the differences cannot be settled by agreement, the dissatisfied person may have a hearing before the corporation commission and if the evidence presented warrants, the commission may order a reduction in the estimated cost. The commission also may require the party proposing to drill to deposit cash in a bank or to file a bond with the commission to cover the estimated cost.

benefits, they are to effect the greatest ultimate recovery. In some cases, however, it appears that the possible economic savings rather than recovery benefits were the primary reasons for applications for well-spacing units.

Although well-spacing orders are generally issued only on applications the preference of operators favoring development under well-spacing units appears to be increasing. Contributing factors are higher development costs in many of the newer fields where production has been found at greater depths, and a desire to eliminate additional offset and other drilling due in part to the many small tracts under lease in the state.

Other than within the areas covered by specific well-spacing orders and by a few early orders made in connection with proration of production, the authority of the commission has not been exerted to control well density or the location of individual wells, or to require unitization of diverse royalty interests in any 10-acre or other sized tract not exceeding 40 acres.

Conclusions

Oklahoma has made a decisive forward step for conservation of oil and gas in regulating development by establishing well-spacing units independent of production control measures.

The Well-Spacing Act of 1935, as upheld by the courts, provides a limited form of "compulsory unitization" between operators and royalty owners for areas up to 40 acres. With this legal basis as a start, permissive or limited compulsory unitization legislation for entire pools may eventually become a reality.

The well-spacing control in Oklahoma appears to have decided advantages over that in use in other states where spacing control is limited to state approval of voluntary agreements among all operators in a pool, or through statutory waste provisions, or the indirect effect of applying an acreage factor to well allowables.

TABLE 2

Summarization of Data on Well-Spacing Orders Issued During 1935-1940 for Development of Oil Pools in Oklahoma

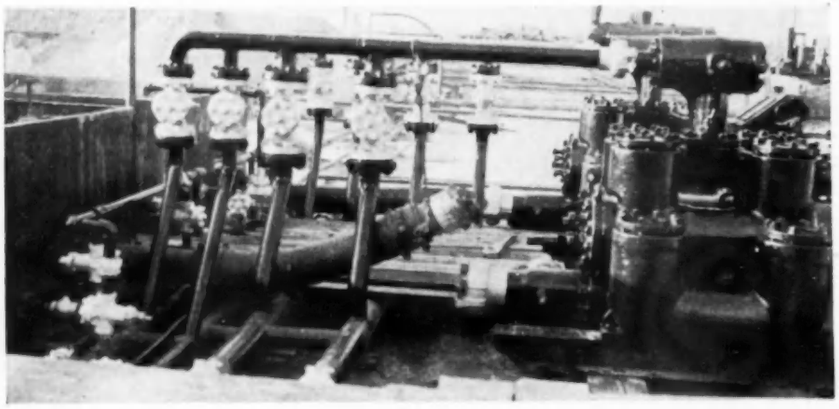
Well Spacing Orders	SIZE OF WELL-SPACING UNITS				
	5 Acres	10 Acres	20 Acres (Tri.)	20 Acres (Rect.)	40 Acres
Number	1	39	10	6	5
Total acreage	320	162,220	45,808	9,620	10,480
Average acreage	320	4,160	2,409	1,603	2,096
Depth of Producing formation:					
Minimum	6,659′	1,500′	3,719′	2,419′	3,600′
Maximum	6,659′	6,655′	7,800′	5,405′	7,600′
Average	6,659′	3,901′	4,825′	4,047′	5,202′

Practical Operating Hints for

THE practical operating hints for the drilling rig and production man, appearing in these features each week, are secured from oil fields everywhere and offer suggestions that will help to improve field efficiency and safety. The items give an excellent picture of the remarkable ingenuity being exercised by the operating divisions of the industry. Contributions to these features will be paid for at the rate of $5 for each illustrated item accepted. Address contributions to "The Editor, THE OIL WEEKLY, Houston."

1. RIGGING UP

Standardized Mud-Pump Discharge Hookup Simplifies Rigging-Up Operations

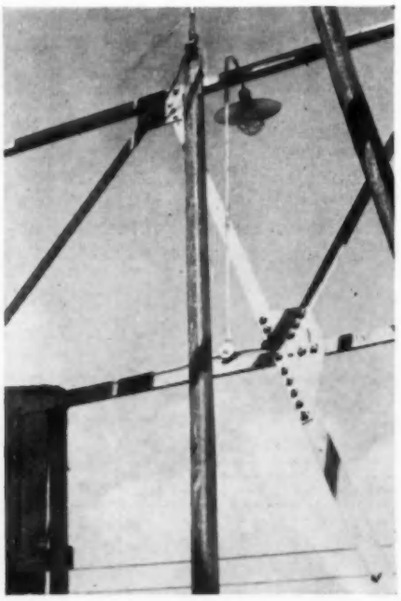


Unions and plug valves are used to standardize this mud-pump discharge hookup.

ONE company has standardized a hookup for mud-pump discharge in Kern County, California, which may be connected or detached from the pumps at suction and discharge and stand pipe by using quick-operating single-bolt unions and lubricated plug valves. Both suction hose connections and discharge manifold are identical so that either pump can be located at either position. Shale pit jet lines, mud vat agitation and compound connections are so placed that any use may be made of the circulation required at a drilling well. When compounding the pumps, one suction flanged fitting is disconnected and replaced with a blind plug, raising the suction hose above the normal fluid level in the circulation tank by hanging on a piece of wire line.

2. RIGGING UP

Water-Filled Tubing For Counterweights



Section of 3-inch tubing, filled with water, makes an effective counterweight.

RIGGING tong counterweights is one of the smaller but nevertheless important jobs in rigging up a well. One company using high floor rigs makes a saving in time and money by using a joint of 3-inch tubing, closed at the bottom by a small valve, and fitted at the top end with a bail of sucker-rod material. Suspended from each counterweight line, the joint is lowered into a round hole previously cut in the edge of the derrick floor immediately below the counterweight line pulley.

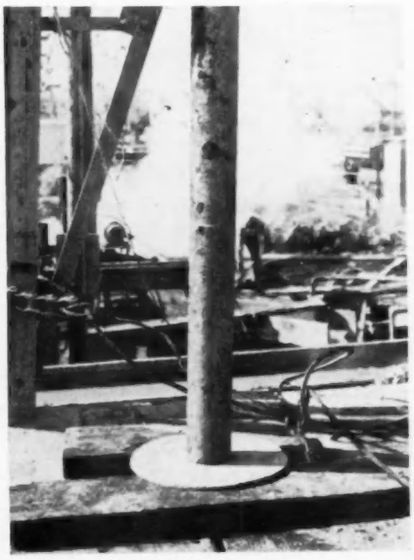
By filling this slim chamber with water, any desired weight can be maintained. Edges of the hole in the derrick floor are greased to allow this easily assembled and maintained counterweight to slide up and down freely through the several feet of play necessary to operate the tongs.

3. RIGGING UP

Standpipe Cuts Moving Time

ON comparatively shallow wells where moving represents a large proportion of the total time at each location, considerable time may be saved that ordinarily is spent in the rigging up and tearing down of mud lines and stand-pipe fittings.

One company rests a mud standpipe upon a flat circular steel disc,



This mud standpipe with shoulder and disc at floor level is easily rigged.

which in turn rests upon the top of the derrick floor. This is accomplished by using 5-inch pipe above the floor, and 4-inch pipe below, forming a shoulder at the floor level which can rest upon the disc. This makes it unnecessary to clamp the stand-pipe permanently to the derrick leg at each derrick or location, and makes it possible to install fittings below the floor without use of special supports for the entire standpipe. The disc is 20 inches in diameter and ½-inch thick.

When equipment is torn down, the stand-pipe is disconnected at the top and bottom, then picked up and laid out on the rack from where it is as quickly taken over and installed at the next location.

4. RIGGING UP

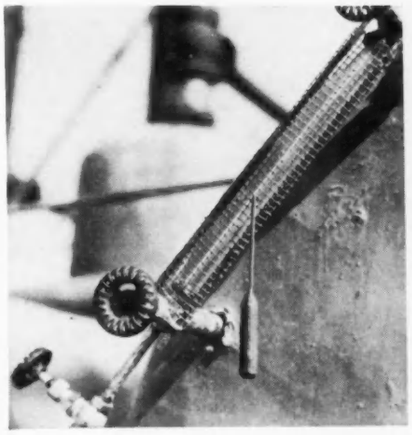
Doghouse Opens to Rig Entrance

FOR safety and convenience of employes, one company builds a dog house to rest on a substructure which matches the doors of the dog house and the entrance to the drilling rig.

The skid base of the dog house at the back is extended and covered between the length-wise members with steel grating and furnished with hand rails. This end butts firmly against the rig so a walk is provided for passing from building to building. A steel stairway leads from the ground to the opposite door of the dog house, and the space beneath the floor is utilized for storage space.

5. BOILER CARE

Pointer Shows Proper Water Level



Pointer hooked to screen around boiler gauge glass shows proper water level.

CONSTANT checking of the water level in the gauge glass of each boiler is one of the most important duties of the man tending the boiler battery. One California company makes it easier for their boilermen by employing a marker or indicating system for each boiler.

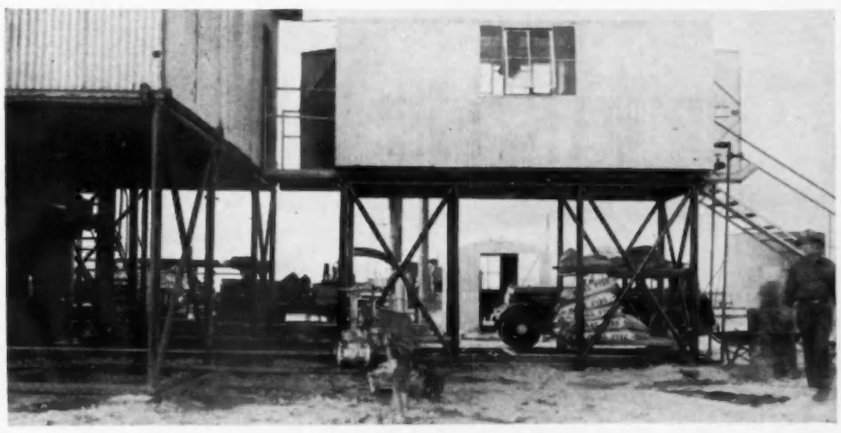
A screen of ¼-inch mesh wire cloth was wrapped around the full length of the gauge glass. A piece of wire several inches long, provided with a short wooden handle on one end and a small hook on the other, was then hooked on to the screen to indicate the exact level at which the boiler water-level was to be maintained. The wire and pointer were painted a brilliant red to aid in quickly noting water conditions of each boiler at a glance.

When the water level was changed, such as when the boiler was being blown down or when more or less steam was being used during various drilling operations, this arrangement proved to be most valuable. As each boiler operates most efficiently at a certain water level, it was a matter of but a few minutes to bring the level back to the normal operating point.

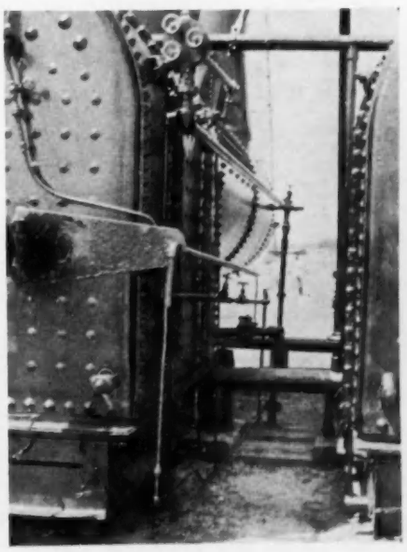
6. SAFETY

Open Blowdown Valve From Boiler Front

TO PROMOTE safety at the battery of boilers at a drilling well, Basin Oil Company attaches a remote control lever to the quick opening blow-down valve, with the operating end of the lever at the boiler front. A supporting plate is attached to the boiler firebox hinge section as a guide for the remote control lever. A quick-opening valve is made up in the blow-down line with the lever vertical and in line with the guide plate. Flanged connections permit rapid dismantling of the units and ease of rigging up when moved to another location.

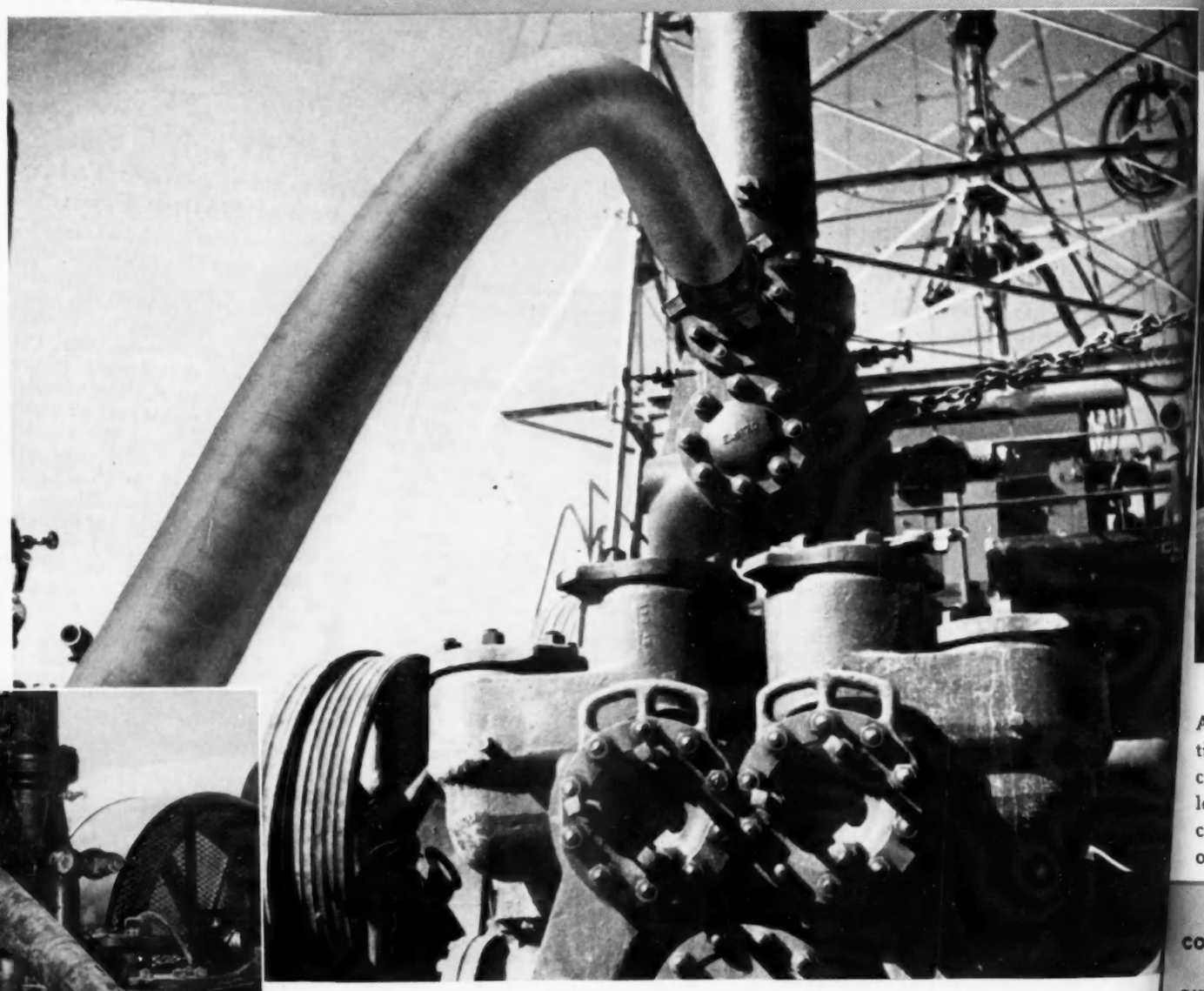


This doghouse, level with the derrick floor and adjacent to the rig entrance, is located for the convenience of employes. A railed stairway leads from the ground.



This extension to boiler blow-down valve permits manipulation from boiler front.

A *Triple Line* OF DEFENSE against Costly Drilling Delays



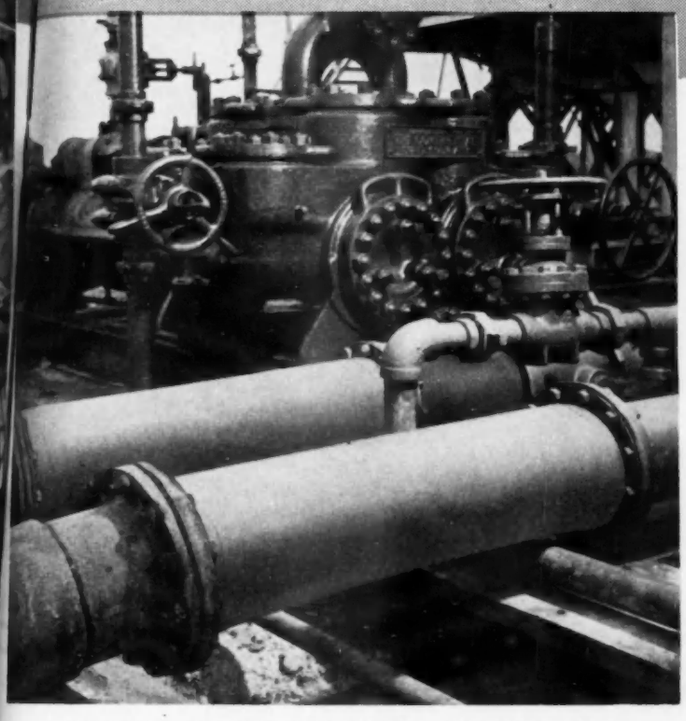
SUPER ROUGH RIDER SLUSH PUMP DISCHARGE HOSE
With Built-in Fittings

A quick connection between pump and mud line. Cuts rig-up and tear-down time. Absorbs vibration. Avoids interrupted service resulting from failure of rigid lines. Eliminates sharp angle fittings. Reduces pressure loss and turbulence. Couplings are leak-proof, streamlined, full-hole.

ROUGH RIDER FLEXIBLE UNITS

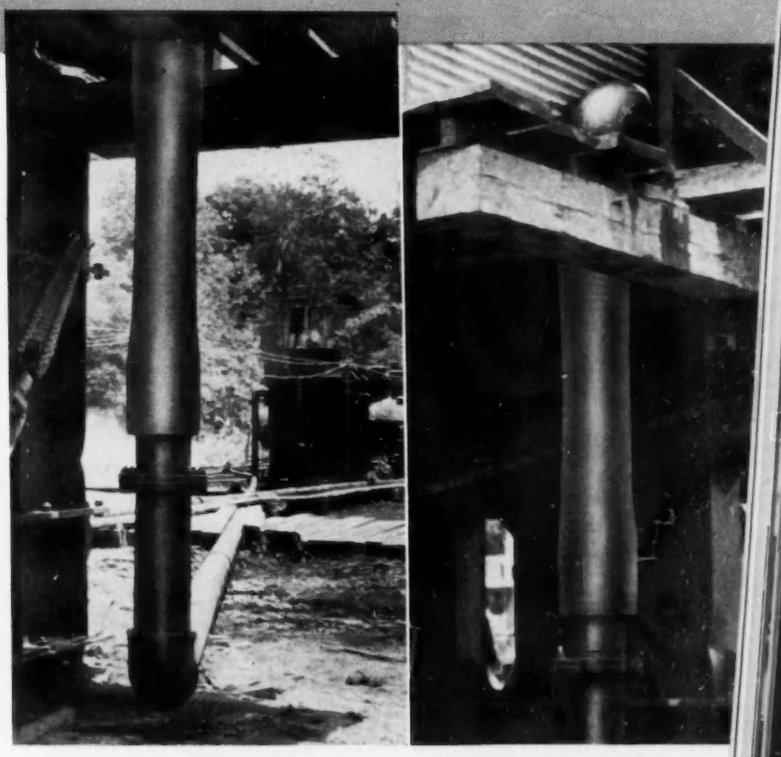
1. Absorb vibration 2. Reduce rig-up and teardown expense 3. Cut maintenance time and cost

These units have been developed and built for each specific purpose and after months of use have been performance-proved in the field. Rough Rider products have great strength with full flexibility. They're quickly available through all Continental stores.



ROUGH RIDER SLUSH PUMP SUCTION HOSE

A flexible unit between slush pit and pump. Absorbs vibration — provides for adjustment of suction line without changing connections. Eliminates broken connections, air-leaks and consequent pump damage. Cuts high maintenance costs. Furnished in standard lengths, with built-on flanges or built-in nipples.



ROUGH RIDER DRILLING ENGINE EXHAUST HOSE

Provides a flexible vibration-absorbing connection in the drill engine exhaust line. Especially applicable where boiler water heaters are operated from drilling-engine exhaust. Reduces minimum breakage of exhaust manifold. Maximum savin rig-up and tear-down time.

COMPLETE HOSE LAYOUT FOR YOUR DIESEL POWERED RIGS —

- Rough Rider Water Circulating Hose
- Rough Rider Fuel Hose
- Super Rough Rider Cord Air Starter Hose
- Rough Rider Air Hose

The famous Super Rough Rider and Rough Rider Rotary Hose with Leak-Proof, Built-In, Full-Hole, Streamlined Couplings are other tough, long-lasting products for modern streamlined circulation systems.

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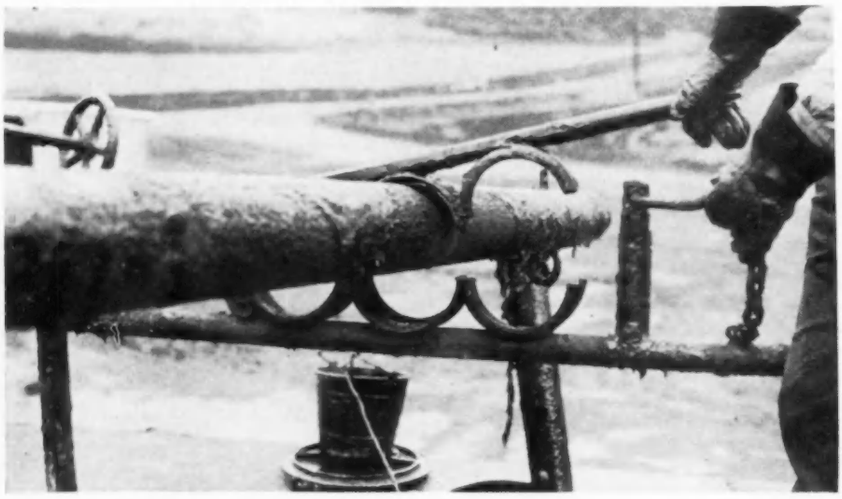
CONTINENTAL

SERVING THE OIL AND GAS INDUSTRIES

Practical Operating Hints for

1. OIL MOVEMENT

Adjustable Frame for Pipe from Lease Storage Tank Facilitates Truck Spotting



This arrangement facilitates truck spotting when crude oil is trucked to market.

FINDING it necessary to contract trucking crude oil from a remote field to market, one company uses a device that has helped to cut down the time involved in spotting trucks at the loading racks. The heavy oil comes from tanks some distance away on the top of a hill so considerable pressure is developed at the loading point, causing the oil line at times to jump and swing violently with occasional escaping bursts of gas.

Three 6-inch casing thread protectors were welded together side by side, then all cut in half along the line of the point of contact of each protector. One half-section was welded to a light pipe framework at a convenient level on the rack. Two links taken from a rotary chain formed a sturdy hinge to which the top section then was attached. A longer handle-bar welded across the top section made it possible to force and latch the pipe into the desired position.

Less time was involved in correctly spotting the trucks, as a latitude of 18 inches was found to be ample for making up any error in spotting. Less spilling due to the clamp arrangement likewise helped to maintain a cleaner driveway.

Rods for tightening this stuffing box are kept available by employing chains.

2. TOOL CARE

Stuffing Box Rods Held by Chains

ON SOME types of tubing-head polished-rod stuffing boxes, a steel rod, kept at or near the well for the purpose, is inserted into either of two holes in each side of the stuffing box to tighten it at intervals.

To prevent misplacing the rod, or dropping it into the cellar, a small hole may be drilled through the flange beside the metal boss on each side of the stuffing box, and a ring and short chain attached. Two 8-inch lengths of sucker rod, each inserted into and welded to the other end of the chain, provide convenient handles that may be hung down out of the way, yet always are instantly available whenever needed to adjust the stuffing box.

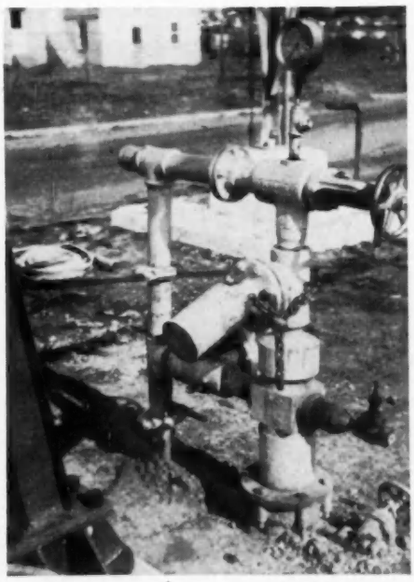
3. WHEEL CONTROL

Valve Wheel Removed To Curb Tampering

TOWN-LOT drilling usually brings potential possibilities and dangers resulting from tampering with valves, gates, or other fittings by children playing in the vicinity of the wells or exposed pipelines.

Not content with but a fence surrounding the well location and Christmas tree of each location, one operator makes doubly sure his flowing wells will not be opened up, or closed with possible damage to the well. The wheel handle was removed from the master-gate valve of the tubing, and an 8-inch section of 4-inch pipe, closed at one end, was placed over the stem of the gate, and a chain that had been welded to the open edges of the pipe was looped around and padlocked to the body of the gate.

Only the superintendent, lease



This wheel handle was removed and the valve stem covered to prevent tampering.

THE PRODUCTION MAN . . .

foreman, or pumper is allowed to carry the keys. The removed valve wheel is kept conveniently nearby so that very little extra time is involved in unlocking the guard and slipping the wheel on the gate stem.

4. GOOD HOUSEKEEPING

Electric Outlet Plugs Protected by Shield

ELECTRICAL plug outlets are vulnerable but necessary pieces of equipment around a producing well, but they are in particular danger from short-circuiting and breakage when it is necessary to mount them in part of the foundation when a derrick is not mounted permanently over the well.

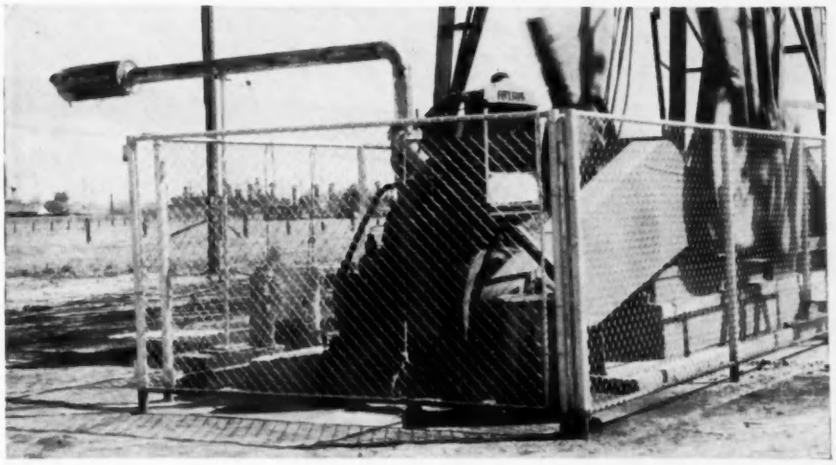
One company protects outlets by fashioning a short 8⅝-inch casing nipple to be placed down over the outlet. Legs are welded to the bottom of the guard to enable it to be set down over the small retaining wall in a snug fit. A round hole cut in the side of the pipe makes it possible to plug into the receptacle without disturbing or removing the protecting guard.

While the guards do not afford protection against an extremely heavy object falling against them, they do prevent damage from accidental tripping or bumping.

This casing nipple gives protection to electrical plug outlet at pumping well.

5. ENGINE CARE

Exhaust Gases Conducted Away from Engine For Greater Efficiency and Safety



Added efficiency is attained by conducting the exhaust gases away from this engine.

ON a pumping well at Rosecrans, the exhaust from the vertical pumping engine is diverted away from the unit with an extension exhaust pipe to remove the gases far enough away so they will not be sucked into the mixer intake, and so that the pumper can make adjustments on the engine without breathing the fumes.

The exhaust extension is made of light-weight pipe, and the free end with the muffler is supported on a stanchion outside the pump enclosure.

which an 18-inch slot has been cut out just wide enough to allow the 3-inch drain-off pipe to move up and down freely. On opposite sides of this slot, two rows of ¾-inch holes were drilled on approximately 1¼-inch centers. A short section of ⅝-inch sucker rod run through any of the holes supports the grasshopper leg at any angle that may be needed at the tank.

This simple support proved to be easier, safer and more positive in action than those commonly supported by wooden stilts.

6. LEASE STORAGE

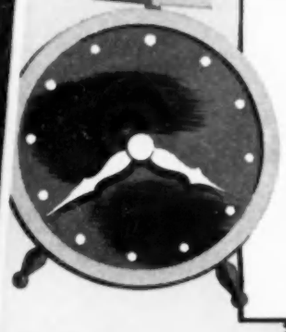
Grasshopper Leg for Gauge Tank

RAPIDLY changing water-cut conditions on an old lease prompted one company to construct adjustable sturdily supported grasshopper legs for their lease and gauge tanks. Some water-cut wells, being produced at irregular intervals due to curtailment regulations made it necessary to adjust the water-oil contact level in the tanks frequently.

The supporting post for the grasshopper leg consists of a 12-foot length of 8-inch casing set in concrete, and in the top end of

Grasshopper leg on this gauge tank is adjustable to meet changing conditions.

Beat the clock...



● YOU'RE SURE of fast drilling when you put "Caterpillar" Diesels on your rigs! Because here are engines that *don't waste time*. Start them going and they stay going, 24 hours a day—without the need of frequent or delicate adjustments to maintain their full-powered output! You get the time advantage of steady drilling—and of the heavy-duty "Caterpillar" Diesel construction that makes for long, trouble-free performance! Furthermore, "Caterpillar" maintains the most complete and readily available replacement-parts and service facilities of their kind in the oil-fields—to help you beat the clock when you need repairs or mechanical assistance!

Cut the cost...

● THERE'S A DIFFERENCE in Diesel economy! "Caterpillar" Diesels, for example, don't need the special "high speed" fuels. They operate efficiently on the lower cost, low grades—such as No. 3 domestic burner oil! Fuel cost, then, with "Caterpillar" Diesels is *less than the usual Diesel fuel cost*. And when natural gas is handy, you can take advantage of its economy . . . because the "Caterpillar" Diesels most widely used for drilling are easily adapted in the field for burning natural gas!

Lubrication is another cost factor. "Caterpillar" Diesels *keep costs down* with their full-pressure lubrication system, air-type oil-cooler and combination absorbent and metal-edge-type oil-filters!

Add this fuel-and-lubrication economy to "Caterpillar" Diesel's maintenance-repair economy—and your drilling costs drop to the point where profits look both surer and *better!*

Get years of service...

● "CATERPILLAR" Diesel Engines are built for speed, dependability and economy on a long-term basis!

For example, the "Hi-Electro" hardening used by "Caterpillar" gives the cylinder liners and crankshaft *more wear-resistance* than can be had with any other practical heat-treatment method. The crankshaft is then *Superfinished* to within a few millionths of an inch of *absolute smoothness* so it fits more accurately and retains its accurate fit longer. Cylinder liners are chemically treated to assure a rapid break-in of rings and liners and superior lubrication of these parts during the break-in period.

To see you through years of heavy-duty, profitable operation, these and other "Caterpillar" long-life features are guarded *—and lengthened—*by a number of important protective devices. Dirt, for instance, is sealed out from the valve mechanism and governor; at the front and rear of the crankshaft; and at the crankcase breather. Additional precautions against dirt include a heavy-duty, oil-bath air-cleaner and combination absorbent and metal-edge-type oil-filters!

And these are *only a few* of the reasons for "Caterpillar" Diesel economy, efficiency and long life. To know them all, drop in at your "Caterpillar" dealer's.

CATERPILLAR TRACTOR CO., PEORIA, ILLINOIS

HIGHLIGHTS IN THE WEEK'S NEWS

Legislation

Deadlock May Bring Death To Illinois Conservation Bill

Passage of an oil conservation bill by the Illinois legislature during the present session appeared doomed after opposing factions reached a deadlock on the controversial problem in a "compromise" conference May 26.

Final action on an oil control bill, sponsored by Governor Dwight H. Green, has been deferred pending outcome of study of projected amendments by a senate subcommittee named by Senator Charles F. Carpentier, East Moline, chairman of the senate gas and oil conservation committee.

With less than five weeks remaining in the current legislative session, Governor Green has indicated he is unwilling to press the original conservation bill for passage as key appropriation measures and other items of importance are waiting their turn on both house and senate calendars.

However, the current measure, introduced by Carpentier and Senator Arnold P. Benson, Batavia, majority leader, is the first bill to receive active sponsorship of the governor and administration forces.

Proponents of the measure, led by Harold Williams, Taylorville, president of the Illinois Petroleum Producers' Association, and Clarence T. Smith, Flora, Illinois representative on the Interstate Oil Compact Commission, said they would not accept amendments which would destroy the original purpose of the bill.

The legislative deadlock was aggravated further when Senator R. G. Crisenberry, Murphysboro, presented a "compromise" bill vesting regulation of the industry in the state department of mines and minerals. The measure was supported by former Governor John Stelle, one of the leaders of forces against Governor Green's conservation program. The bill eliminated a three-man commission feature embodied in the original bill, and also avoided inclusion of clauses governing common purchase of oil, well spacing and limitation of production of wells in certain areas for the prevention of physical waste.

"We are for the Crisenberry measure because it places control of the industry without proration in the hands of the department of mines and minerals where it belongs, and not in the hands of an arbitrary commission," George Harsh, president, and Dorsey Hager, technical director, of the Illinois Oil & Farm Owner's Equity Association, said in a joint statement on May 28.

Three amendments proposed by administration forces proved to be unacceptable to opponents. They provided that no rule or order shall be issued to limit production below 200 barrels per week of any well in a poor producing area from an average depth of 1000 feet or less. For each additional 100 feet of depth, the minimum output would be boosted 20 barrels weekly.

Another amendment provided the method of regulation should be based on approved petroleum practices rather than on economic methods.

Carpentier said a final effort will be made before June 3 to reach an agreement, and that only one spokesman will be drawn from each side. Designated representatives for the governor's bill probably be either Williams or Smith, with A. K. Swan, Evansville, Indiana, attorney and secretary of the Tri-State Petroleum Association, speaking for opponents.

Pennsylvania Bill Provides For Compact Membership

A new bill before the Pennsylvania senate would bring the state into the Interstate Oil Compact. Its enactment would automatically bring New York into the compact, the legislature that adjourned there recently having enacted a bill making New York's participation contingent upon Pennsylvania's enactment of a compact bill.

The Bradford District of the Pennsylvania Oil Producers Association last week unanimously voted that Pennsylvania join the compact.

Texas Senate Delays Action On Market Demand Bill

A market demand bill pending in the Texas legislature had not been acted on finally when the senate adjourned last week. Sponsors of the bill, however, are confident that it will be taken up and passed.

Commenting on the situation, Texas Railroad Commissioner Jerry Sadler, who has been urging passage of the bill, declared that without it the state may as well have no proration at all.

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Washington

Costs Inquiry Would Cover Tanker Transportation

A special resolution providing for a Congressional investigation of costs of living, with particular reference to increased transportation charges, has been given favorable consideration by the House Rules Committee and is expected to be taken up for consideration in the House this week.

The measure, introduced by Representative Joseph E. Casey, provides for appointment of a five-man committee to make a full and complete study of problems facing the purchasers of goods and submit such recommendations for legislation as may be found desirable.

It was indicated that one of the major phases of the inquiry would be the spread between the prices of raw materials and the retail prices to consumers to determine whether "midleman's" profits have been stretched too far, but another important factor to be probed would be transportation charges, particularly by water.

Representative Casey declared that while the costs of operating ships are higher than they were two years ago, and that insurance rates have risen very substantially, it does not cost four times as much to operate ships carrying fuel oil from Galveston to Boston as it did a year or two ago, although rates have been increased to that extent.

"The entire shipping situation seems to afford the clearest indications of outright profiteering that have been brought to my attention so far," he said. "I cannot understand why the Maritime Commission has been so slow in acting, not merely to prevent rates from going higher, but to bring them down to figures bearing at least a remote relation to actual operating costs."

Federal Control May Be Club To Force State Action

Irritated over the consistent refusal of Illinois and California to undertake control of oil production, and the possibility that Texas will not extend its law, Administration leaders in Washington last week threatened to reintroduce the Cole bill for Federal regulation of production unless the situation was cleaned up in the near future.

Even Representative William P. Cole, Jr., a disapprover of Federal regulation, has expressed criticism of the failure of the state authorities to see in local regulation the only alternative to Federal control.

So far, it appears that if the bill is reintroduced, it will be as a threat to the states if they persist in their refusal to get in line, and not for immediate enactment. However, if the "outlaw" states show no signs of reform, and particularly if Texas fails to extend her law, the measure would be pushed, with every indication that its enactment would be supported by enough members of Congress to put it over.

As a further demonstration of the dissatisfaction with the states that have refused to undertake regulation, the bill

will be limited in its application to states which have no control or where control laws are laxly enforced.

Supporters of the legislation contend that the present muddled situation, with state regulation ranging from none at all to complete and highly efficient control, is no help to the industry in its efforts to meet the increasing demands of the defense program without waste.

With production strictly rationed in one state and totally unlimited in another, they say, efforts at national conservation can not be successful.

This group argues that the only effective way of dealing with the situation is by legislation enabling the government to step in where state authorities cannot or will not regulate the oil business. Such authority, it is asserted, would be an incentive to the states to clean their own houses, while encouraging those that are attempting to carry on the conservation program.

Pipe Line Bill Advanced; Ickes Talks Rationing

New administration warnings of possible rationing of oil, gasoline and electricity were issued last week as Congress prepared to take prompt action on the Cole pipe line bill, designed to provide new oil transportation facilities from the Gulf to the Atlantic coast.

As the House Interstate & Foreign Committee sent the Cole bill to the House May 29 with recommendations for its enactment, Secretary of the Interior Harold L. Ickes and his aides were telling newspapermen that the use of gasoline and electricity might have to be restricted to meet shortages of power and oil.

Ickes proposed adoption of national daylight saving as one means of conserving power.

The Cole bill was sent to the House before the committee wrote its report, but it was indicated the report would contain little new material and would be based, for the most part, on the exhaustive report submitted some days ago by the oil subcommittee.

A few changes were made in the bill, one of which would express the intent of Congress that government construction of pipe lines be undertaken only in the event that all efforts to encourage the building of facilities by private capital failed.

The measure as introduced gave the President authority for two years to order the construction of pipe lines needed for defense by government agencies, to vest in private pipe line builders the right to condemn where necessary to cross railroads, highways and private lands, and to provide financial assistance if necessary for the construction of private lines.

One of the admendments incorporated in the measure by the committee, however, would prohibit use of funds now appropriated and would require that any advances made to pipe line builders be from funds to be voted by Congress in the future.

The committee broadened the section authorizing the President to relieve any pipe-line operator from provisions of the Interstate Commerce and Natural Gas Acts to provide for exemption also from any measures amendatory of those laws, which it was said would include the Elkins Act, among others.

Following the sessions at which the bill was approved by the committee, Representative William P. Cole, Jr., said he would appear before the Rules Committee on June 2 to ask that the measure be given right of way, and House leaders expressed the belief that it would be passed and sent to the Senate during the week.

Discussing the situation at a press conference, Ickes declared priorities should be given materials for pipe-line and oil-tanker construction to speed up their building.

Stressing that the problem is one purely of transportation, he said that until new facilities are provided capable of meeting fully the needs of the Seaboard area, it might be necessary to restrict use of oil and gasoline. Any restrictions imposed, he indicated, would be upon civilian uses in order that the defense program might continue uninterrupted.

Similarly, the public may be asked to reduce its consumption of electricity.

API Committee Approves Transportation Report

The American Petroleum Industry's committee named at the request of the Office of Production Management last week approved a comprehensive factual survey of means and methods of offsetting disturbing effects of transfer of American oil tankers to British shuttle service upon availability of supplies for the Atlantic Coast area.

The report, details of which were withheld, will be presented to the OPM Tuesday in Washington. It was said that full consideration had been given to all possible means of meeting needs of the Atlantic Coast, largest single oil-consuming area in the United States, and of preventing disturbance of operations of the industry.

The proposal, it was learned, included plans to increase tank-ship tonnage and operating efficiency expansion of pipeline capacities, and to use improved efficiency of operation of railroad tank cars and highway tank trucks, and increased utilization of sea-going and inland waterway barges.

The committee is composed of executives of oil companies and industry trade associations.

Opposition Develops to Large Texas-East Coast Oil Line

Indications are that opposition is developing to construction of a 24- or 26-inch pipe line from Texas to a point near Bayonne, New Jersey, one of the means suggested to remedy the problem of moving petroleum to the East Coast.

Admiral Land, United States Maritime Commission, was quoted in Washington as saying 17 new tankers would be off the ways by October, and a total of 25 by the first of the year. These tankers, plus rearrangement of tanker schedules, he was understood to believe, would go far toward solving the coast-wise transportation problem.

Also the thought is being expressed that such a line, which would cost approximately $75,000,000, would not be economically sound because of higher operating costs than required by tankers. Other opinions are that steel mills could make smaller sizes, say 12-inch pipe, much more rapidly, and that it would be better to lay three of these lines than one single large one.

Plan Reduction in Steel Used by Production Branch

Plans for a reduction of 20 percent in steel requirements of the production branch of the oil industry were worked out May 27 and 28 by officials of state regulatory bodies and representatives of the industry meeting with members of the Office of Production Management.

In terms of volume, the oil men were told, the reduction would amount to about 250,000 tons a year and might be an important factor in providing needed materials for projected pipe-line construction and for other necessary defense activities.

It was proposed that the saving of metal be accomplished by the wider spacing of wells through unitization or other agreements, avoidance of unnecessary drilling, and in such other ways as might be devised.

Because the accomplishment of the program will necessitate changes in the regulations of the conservation states, and possibly in the laws themselves, OPM officials met first with representatives of the state regulatory bodies.

Present at the May 27 meeting were Gail S. Carter, Santa Fe, representing the New Mexico Oil Conservation Commission; F. R. Fry, Lansing, petroleum engineer in the Michigan Department of Conservation; Representative Oren Harris of Arkansas, representing Chairman O. C. Bailey of the state Oil and Gas Commission; J. H. McAlphin, Eldorado, Arkansas, representative on the Interstate Oil Compact Commission; J. C. Hunter, Abilene, Texas representative on the compact; Charles L. Orr, Oklahoma City, secretary of the compact; Hiram M. Dow, Roswell, New Mexico, representative on the compact; Olin Culberson, Austin, representing the Texas Railroad Commission; Major B. A. Hardey, Shreveport, chairman of the Louisiana Board of Minerals; Andrew F. Schoeppel, Topeka, chairman of the Kansas Corporation Commission; Glen Staley, Hobbs, New Mexico, proration umpire; H. M. McClure, Alma, chairman of the Michigan Oil Advisory Board, and Russell B. Brown, Washington, general counsel of the Independent Petroleum Association of America.

Government officials present included R. E. McConnell, chief of the conservation section of OPM, presiding; Dr. Robert E. Wilson, chief OPM consultant on petroleum; Samuel E. Neel, legal division, OPM; Lieutenant Commander W. C. Letrobe, Bureau of Ships, Navy Department; H. W. Proctor, Quartermaster Corps, War Department; P. M. Robinson, petroleum consultant, OPM; M. Quinn Shaughnessy, chief of the petroleum section, Office of Price Administration and Civilian Supply; Andrew Stevenson, Office of Price Administration and Civilian Supply, and Frank Ayer, conservation section, OPM.

At the May 28 conference, industry representatives included Brown, for the IPAA, Charles McGaha, National Stripper Well Association; Lawrence Vander Leck, Oil Producers Agency of California; Al Peake, Standard Oil Company (Indiana), and J. C. Donnell, The Ohio Oil Company.

Steel Conservation Stressed

At both conferences, Wilson and McConnell explained the necessity for making a sharp reduction in the consumption of steel in the production branch, expressing the belief that this could be

accomplished without interfering substantially with the conservation of oil, with exploration for new reserves or the ability of the industry to supply all foreseeable needs for petroleum.

At the moment, it was declared, the country is confronted with the necessity for very careful conservation of steel and, further, additional steel will be needed above normal requirements to meet the situation developed as a result of the transfer of many tankers to the movement of oil for the British.

To deal with this situation, the industry is expected to build pipe lines or additional tankers to maintain an adequate supply to the Eastern seaboard, it was pointed out, and the steel saved in the production branch would contribute materially to the assurance of a supply of the metal for pipe lines and tankers.

OPM officials pointed out that the cut in oil-production consumption is in line with the recent request to the automobile industry for a 20 percent reduction in output.

The meetings were told that steel ingot production is holding up well, and probably is sufficient to meet present needs, but that bottlenecks are developing in certain finishing divisions, particularly for plate steel. It was pointed out that tubing of 18 inches or larger was made from plate steel, while smaller pipes were developed through a tubular process, and that the pressure is not so great on the latter division of the industry at the moment.

Discussion of the provision of an adequate supply of oil for the Atlantic coast region led to consideration of the relative desirability of tankers and pipe lines. It was made clear by Wilson that defense officials favor the land lines. Reasons given included the fact that pipe lines could not be constructed with as little steel as tankers capable of handling the same volume of oil, but that the vessels would require a great number of other products and a great deal of machinery which could be eliminated in pipe-line construction, and that pipe lines would be less vulnerable to interruption in the event of war while, if partly destroyed, they could be rebuilt in much less time than would be required to replace tankers.

State officials and oil-industry representatives agreed upon the desirability of carrying out the proposed program and assured the defense officials of their full cooperation.

It was generally agreed that substantial savings in steel could be made by the adoption of wider well spacing, unitization agreements and avoidance of unnecessary drilling.

The industry representatives, while agreeable to the plans proposed, pointed out the necessity for changes in the state laws and regulations to make them effective. Particularly needed, the discussion developed, would be a change to permit the drilling of one well for several grouped leases, instead of a number of wells.

Most of the state representatives expressed the opinion that the necessary changes could be made but, on their part, contended that full cooperation of oil companies, land owners and royalty holders would be necessary.

If the plan can be made effective, it was said, in the long run it should result in the recovery of substantially more oil per ton of steel used and per dollar invested.

Allowables

June Allowables Foreshadow Satisfactory Crude Control

Crude oil production will be curtailed with practically the same degree of strictness in June as in May, during which month about 3,000,000 barrels of crude came out of storage.

Eight prorated states, which account for about 85 percent of the country's production, have adopted June allowables 92,508 barrels below indicated daily average market demand for crude from those states, as shown in an accompanying table.

These states hold actual production close to allowables, with exception of California, which has been overproducing its state quota about 50,000 barrels daily. For the eight states, therefore, actual production may be expected to be around 40,000 barrels under estimated demand, on the basis of wells on production at the beginning of the month, although as new wells are completed and are assigned allowables, permitted production will grow somewhat larger.

Illinois, meanwhile, although not prorated, continues to produce less than demand, because of the natural decline of its fields, and the shortage in June probably will be around 20,000 barrels daily.

Added to the under-production in the prorated states, this Illinois deficiency will increase the total for the United States to about 60,000 barrels daily, indicating that around 1,000,000 barrels would be taken from storage during the month if refinery runs of crude should be in close conformity with market demand for products.

As compared with the figure of 92,508 barrels daily by which the June allowables of the eight prorated states fall below indicated demand, there were similar deficiencies of 88,784 barrels daily in May and 81,592 in April.

Texas Details

The Texas Railroad Commission's order, effective June 1, fixed a total allowable of 1,871,401 barrels daily. That was 2007 barrels higher than the allowable in effect May 24. The total net allowable was 1,411,732 barrels, which was 15,902 barrels less than the net allowable as of May 24.

The only reduction was in the Old Ocean field, which was cut in compliance with a request made by operators at a state-wide proration hearing. The cut amounted to 1171 barrels daily.

The reduction in the total state allowable was effected by retaining nine shutdown days, the same number that was in effect during May. Since there are only 30 days in June, the total number of producing days will be reduced to 21, instead of 22. The Panhandle is to be closed down only four days, June 7, 14, 21 and 28. Other fields will be closed down June 1, 7, 8, 14, 15, 21, 22, 28 and 30.

There were four or five small increases effected through revision of field rules; that is, the rules have been changed to permit the assignment of more acreage than was allowed in the order for May 1. No other increases were granted.

The commission estimated that operators would continue to produce about 3.5 percent less than the allowables assigned. Thus, the actual net production will probably be about 1,362,280 barrels daily. This is 9420 barrels daily less than the consumer demand for Texas oil for June as estimated by the United States Bureau of Mines.

Fields permitted to produce on shutdown days remained the same, with one exception. The commission exempted the Jamison-Pollard field in West Texas.

The Louisiana Department of Minerals set the June allowable at 319,500 barrels, a drop of 824 barrels from the May allowable. For June, North Louisiana was given 69,462 barrels, a drop of 839 barrels from May. South Louisiana was given 250,038 barrels, an increase of 15 barrels.

Oklahoma Corporation Commission set an allowable of 415,000 barrels per day, an increase of 5000 barrels over the past month's quota, but 44,700 barrels under the bureau estimate of market demand.

The commission lifted proration in 11 old pools, but added three new areas, Lake Tecumseh for 2500 barrels daily,

June Allowables 3 Percent Under Market Demand

(Barrels Daily)

STATE	Bureau of Mines Estimate of Demand	State Allowable Beginning of Month	Difference of Allowable from Demand	Percent Difference of Allowable from Demand
Arkansas	83,000	73,612	— 9,388	— 11.3
California	615,300	575,000*	—40,300	— 6.6
Kansas	220,400	232,400	+12,000	+ 5.5
Louisiana	319,700	319,500	— 200	— 0.0
Michigan	38,000	37,500†	— 500	— 1.3
New Mexico	113,000	113,000	.....	.....
Oklahoma	459,700	415,000	—44,700	— 9.7
Texas	1,371,700	1,362,280‡	— 9,420	— 0.6
Total 8 Prorated States	3,220,800	3,128,292	—92,508	— 2.9
Illinois	345,300	323,600ɪ	—21,700	— 6.3
Other States	263,900	.....	.....	.....
TOTAL UNITED STATES	3,830,000	.....	.....	.....

* Recommendation of Conservation Committe of California Oil Producers.
† Estimate of actual production that will occur under prescribed regulations.
‡ Texas Railroad Commission's estimate of actual net daily production, allowing for usual under-production of 3½ percent under net allowable, which at the beginning of June is calculated at 1,411,732 barrels daily. However, allowable normally increases as new wells are completed. Under June order, most Texas fields were ordered shut down June 1, 7, 8, 14, 15, 21, 22, 28 and 30. Panhandle was ordered shut down June 7, 14, 21 and 28.
ɪ Average level to which unprorated Illinois production naturally had declined for 4 weeks ended May 24.

Romulus pool for 2500 barrels daily, and North St. Louis for 500 barrels daily, all in Pottawatomie County. Minor adjustments were made in only two prorated fields, the Oklahoma City Simpson zone being increased 600 barrels to 10,000 barrels, and the Frederick deep pool, Tillman County, increased 100 barrels to 1600 barrels daily. Production was estimated at 414,000 barrels daily, and it was stated that Oklahoma could not produce much in excess of the present rate.

Kansas Corporation Commission issued a record high allowable of 232,400 barrels per day for June, and reserved the right to increase this figure at any time during the month. This figure is 14,400 barrels over the May allowable, and 12,000 barrels above the bureau estimate of demand.

Nominations by purchasers totaled 246,126 barrels daily. Theo A. Morgan, conservation director, said "temporary conditions" limited the capacity of Kansas pipe lines to transport oil, but that substantial increases will be made in the near future in pipe-line capacities. He estimated 242,000 barrels of crude could be moved at present, and said expansions on gathering lines would increase their capacity to between 260,000 and 270,000 barrels a day. "But this will not end pipe line development in Kansas," Morgan asserted. "There will be more development as the need arises."

Pipe Lines

Southern Natural Gas Plans Large Expansion Program

Southern Natural Gas Company, through President C. P. Rather, told the Securities Exchange Commission last week of plans to increase its natural gas sales capacity by 45,000,000 feet a day, a project that includes 125 miles of pipe-line construction at a cost of $2,880,000 and installation of 17,300 horsepower of additional compressor capacity to cost $1,617,000.

Rather said needs of industrial consumers, including steel companies in the Birmingham district and added steam plants of Georgia Power Company, necessitated the expansion.

Magnolia Lets Contract for 190-Mile Natural Gas Line

Magnolia Petroleum Company accepted contractors' bids late last week for construction of a 190-mile natural gas carrier to extend from its properties in the West Ranch field, Jackson County, Southwest Texas, to its refinery at Beaumont. The line will involve 160 miles of 14-inch and 30 miles of 16-inch welded pipe, with the latter on the Beaumont end, and will have a rated capacity of 50,000,000 feet of gas daily without use of booster stations. It is being built primarily to supply fuel for the company's refinery and adjacent speciality products plants.

Pipe is now en route from the mills, having been ordered some three months ago. Construction work will begin about mid-June, and is slated to be completed before November 1, 1941. Separate contracts will be made on four major river crossings.

This project marks re-entry of Magnolia Petroleum Company into the natural gas field after disposing of its extensive transportation system, purchase and sales contracts to the United Gas Pipe Line Company in 1929 for $50,000,000. The latter has continued to supply the Beaumont refinery with Louisiana and North East Texas gas.

Magnolia Pipe Line Company will supervise the construction of the West Ranch-Beaumont carrier, but operation will be by the Magnolia Petroleum Company's natural gas and gasoline department, headed by Don E. West.

Plan Big Line to Serve Michigan With More Gas

Consumers Power Company last week announced plans to serve 66 additional Michigan cities and towns with natural gas, a $4,000,000 project which will entail construction of 250 miles of 18- and 22-inch transmission line by Panhandle Eastern Pipe Line Company.

Consumers Power Company contracted with Panhandle Eastern Pipe Line Company for 10 to 15 billion feet of gas annually to augment its supply now under contract in Michigan fields.

The Michigan Public Service Commission has set hearing for June 10 on application of Consumers Power Company to switch from manufactured to natural gas in the communities that would be served under the project, and application of the pipe line company to build the line.

The line would extend from the Michigan-Ohio state line where it would tie into the carrier now serving Detroit, and would run north through Flint to Saginaw, with spurs to Pontiac and Royal Oak. A second line would route west through Jackson and Battle Creek to Kalamazoo. Construction will start as soon as state approval is obtained, and the project would be the largest of its kind so far undertaken in the state.

Line Pipe Shortage Delays Kansas Looping Project

Kaw Pipe Line Company will delay proposed pipe-line construction in Western Kansas until at least September, as the company can secure no line pipe at this time. When pipe is available, the company will loop a 34-mile 10-inch crude oil line from Chase pool, Rice County, northwest to Susank pool, Barton County.

Contrary to rumors, Kaw Pipe Line Company will not as yet provide an outlet for Ray pool, Phillips County, Kansas, by a 40-mile line from its present terminus at Burnett pool.

Abell Pool to Receive Outlet With 20-Mile Line

The Texas-New Mexico Pipe Line Company has authorized construction of a 20-mile 6-inch crude line to extend from the Crane Station terminus of its West Texas-Houston 12-inch carrier to the Abell pool, northern Pecos County. The line will gather and transport oil for the account of the Sinclair Prairie Oil Marketing Company, which recently solicited well connections from seven active operators in the field, which has 10 wells on production. The crude will be delivered to Sinclair Refining Company's refinery and terminal at Houston. Magnolia Petroleum Company will utilize the above market outlet, although it has installed a gathering system that is connected to an 80,000-barrel steel tank.

Associations

Illinois-Indiana Conference At Robinson June 7

Subjects of national and local interest have been scheduled for the ninth annual petroleum conference of the Illinois-Indiana Petroleum Association, to be held in Robinson, Illinois, June 7.

C. J. Haas, Illinois production superintendent for Adams Oil & Gas Company, Centralia, Illinois, will preside at the morning session, and Lee Mulvihill, executive secretary of the association, will deliver the address of welcome. The program includes:

"Geology and Oil Discovery," by A. I. Levorsen, consulting geologist, Tulsa;

"Transportation of Crude Oil by Pipe Line," by C. H. Gompf, treasurer of Illinois Pipe Line Company, Findlay, Ohio, and

Sound picture on "Controlling Nature's Fury," to be delivered by C. P. Parsons, vice president of Halliburton Oil Well Cementing Company, Duncan, Oklahoma.

E. G. Robinson, manager of the eastern production division of Shell Oil Company, Centralia, will preside over the afternoon program. Discussions will include:

"The Washington Situation," by Sam O'Neal, Washington correspondent for the *St. Louis Star*.

"Horizontal Oil Wells Are All in Pay and Flow by Gravity," by Leo Rannev, petroleum engineer, McConnellsville, Ohio;

"Development of the Present Preference Rating System," by H. Kennedy McCook, chief of information for the priorities division of the Office of Production Management, Washington.

Dr. Gus W. Dyer, professor of economics at Vanderbilt University, Nashville, Tennessee, will be guest speaker at the annual stag dinner.

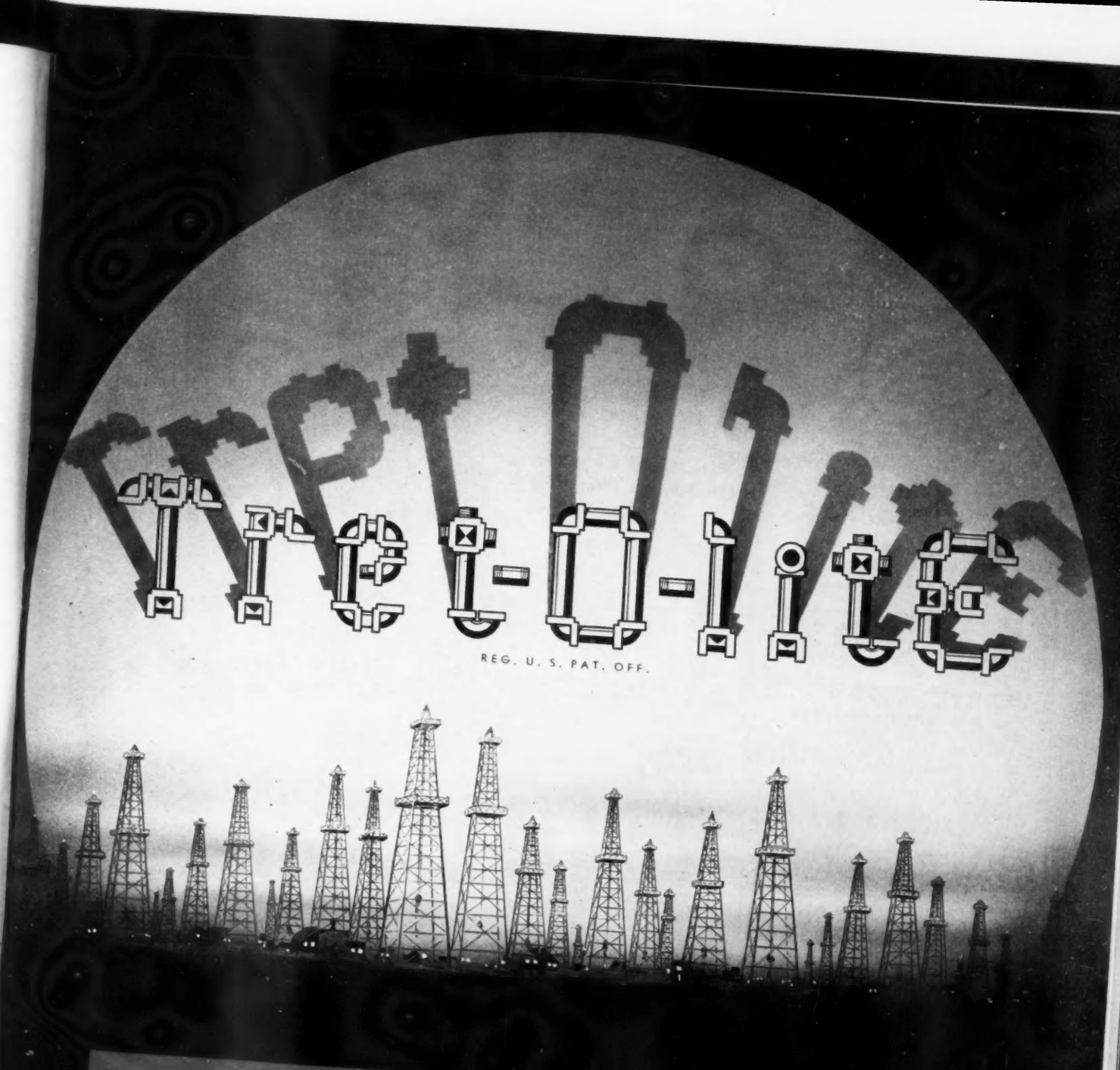
Semi-Technical Knowledge Increases Service, Scouts Told

The scouting branch of the petroleum industry has in recent years become a greater asset through ability of its members to apply semi-technical knowledge regarding geology, geophysical and production operations, Jack Pew, Sun Oil Company official and former scout, told members of the National Oil Scouts and Landmen's Association, who held their annual convention in Dallas May 29-31.

A record turnout of scouts was established at the eighteenth annual gathering. The association has more than 1000 members, it was revealed by Charles J. Bradley, Tyler, retiring president, and has won widespread recognition through publication of its annual book on all important producing areas.

The present system of proration and regulation within the petroleum industry has disproved the need for a central authority, or federal control, stated Joseph E. Pogue, vice-president of Chase National Bank, New York.

"It is the duty of those who have grown up with the oil industry to tell our citizens that in this domain there has been developed a democratic method of industrial regulation which should have a wide sphere of usefulness if its



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structure can be preserved and its advantages made sufficiently known," he said. "The oil industry has provided our country with the basis for a higher standard of living in the form of personal mobility, thus extending our existence in both time and space. It also offers an unusual method of cooperation between government and industry, proved by experience, which lends hope that our system of free enterprise can be conserved even in circumstances where competitive practices must be modified by the authority of the state."

Moving pictures and an oral description of methods used in capping wild wells in the Gulf Coast was presented by Madden T. Works, representative of Cameron Iron Works, Inc., Houston. Other technical features included an illustrated discussion on well logging by E. R. Albert, Jr., engineer for Baroid Well Logging Service, Tulsa.

Oil Production Taxes

In all states other than Texas, levies are severance taxes, collected in lieu of all other taxes, with exception of small special assessments made in Louisiana and Oklahoma, as shown below.

In Texas, any political subdivision as well as the state has power to tax, and state itself levies special taxes in addition to gross production tax, as shown below.

Arkansas—2.6 percent of gross market value.

California—.66443 mills per barrel of oil produced and 17.39 cents an acre on proved lands.

Louisiana—From 4 to 11 cents a barrel, depending upon gravity, average being 7½ to 8 cents; in addition, special taxes may be levied on well equipment, bringing total tax to average around 8¾ cents a barrel.

Montana—Two percent of gross value at well and ⅝ of 1c per barrel.

New Mexico—Severance tax of 2 percent on oil and gas.

Oklahoma—Five percent of gross value less royalty interests; in addition, surplus warehouse stocks may be taxed by counties.

Texas—Gross production tax is 2¾ cents a barrel or 2¾ percent, whichever is higher, and averaged 2.94 cents in 1939. In that year, total tax on average barrel produced was, however 9.23 cents, having included following levies: gross receipts 0.14 cents, regulatory 0.19 cents, state ad valorem 0.98 cents, franchise 0.06 cents, other state taxes 0.62 cents, and local ad valorem 4.30 cents.

Wyoming—Production tax based upon state and county assessments.

Mississippi Plant to Go On Stream This Month

Paluxy Asphalt Company's 3500-barrel plant, including a cracking unit and an asphalt plant five miles from Yazoo City, Mississippi, will go on stream between June 10 and 15. The company is building a line which will be completed within a few days from the plant to the Tinsley field, and has made a long-time contract with the Union Producing Company for crude. The company contemplates marketing the major portion of its production in Mississippi and adjacent southeastern states.

E. Constantin, Jr., Dallas, is president of the company; E. F. Bourg, vice president; A. A. Spencer, manager of sales, and H. J. Toup, superintendent.

Eastern States Crude Oil Prices

FIELD—	Flat Price	Date Posted
Bradford-Allegany	$2.55	5–21–41
Sw. Pa. Pipe Line	2.20	5–21–41
Eureka Pipe Line, W. Va.	2.14	5–21–41
Corning Grade, Ohio	1.31	5–27–41
Buckeye Crude, Ohio	1.55	7–12–40

Major Crude Oil Price Changes

	Penna. Grade	Mid-Cont. (36 Gr.)	Calif. (26 Gr.)
May 1, 1934	Up 10	.....	.....
Nov. 6, 1934	Cut 25	.....	.....
Dec. 6, 1934	Cut 25	.....	.....
Jan. 4, 1935	Up 15	.....	.....
Feb. 4, 1935	Up 15	.....	.....
May 16, 1935	Cut 15	.....	.....
June 26, 1935	Cut 15	.....	.....
July 16, 1935	Cut 10	.....	.....
Aug. 29, 1935	.....	.....	Cut *1
Sept. 6, 1935	Up 5	.....	.....
Oct. 29, 1935	Up 15	.....	.....
Nov. 1, 1935	.....	.....	Up *28
Nov. 18, 1935	Up 15	.....	.....
Dec. 6, 1935	.....	.....	Up *9
Jan. 9, 1936	.....	Up 10	.....
Jan. 13, 1936	Up 15	.....	.....
Mar. 7, 1936	.....	.....	Up *18
Dec. 28, 1936	Up 12	.....	.....
Jan. 28, 1937	.....	Up 12	.....
Feb. 24, 1937	Up 10	.....	.....
June 7, 1937	Up 15	.....	.....
Sept. 1, 1937	Cut 22	.....	.....
Oct. 12, 1937	Cut 25	.....	.....
Dec. 1, 1937	Cut 15	.....	.....
Mar. 7, 1938	Cut 17	.....	.....
June 13, 1938	Cut 25	.....	.....
Sept. 1, 1938	Cut 12	.....	.....
Oct. 11, 1938	.....	Cut 20	.....
Jan. 21, 1939	Up 12	.....	.....
Feb. 2, 1939	Up 8	.....	.....
Mar. 6, 1939	Up 12	.....	.....
Oct. 6, 1939	Up 25	.....	.....
Nov. 1, 1939	Up 15	.....	.....
Dec. 1, 1939	Up 10	.....	.....
Jan. 1, 1940	Up 25	.....	.....
Feb. 1, 1940	.....	.....	Cut *7
May 22, 1940	Cut 25	.....	.....
June 18, 1940	Cut 25	.....	.....
July 12, 1940	Cut 25	.....	.....
Aug. 28, 1940	Cut 15	.....	.....
Nov. 12, 1940	Up 15	.....	.....
Dec. 17, 1940	Up 15	.....	.....
Jan. 27, 1941	Up 15	.....	.....
April 1, 1941	.....	Up 5	.....
April 23, 1941	Up 10	.....	.....
April 24, 1941	.....	.....	Up *6
May 19, 1941	.....	Up 10	.....
May 21, 1941	Up 15	.....	.....
May 22, 1941	.....	.....	Up *6

* Signal Hill 26 gravity.

CRUDE OIL PRICES IN CALIFORNIA

Prices per barrel in field, posted by Standard Oil Company of California, effective May 23, 1941
All gravities above those quoted take highest price offered in that field

Gravity	Signal Hill (Long Beach)	Wilmington	El Segundo	Seal Beach	Huntington Beach	Inglewood	Playa del Rey	Olinda, Brea Canon	Athens-Rosecrans	Torrance	Richfield	Whittier East Coyote (La Habra)	Montebello	West Coyote Hills	Santa Fe Springs	Newhall, Kern River, Kern Front, McKittrick, Round Mountain	Greeley, Canal, Wasco	Coles Levee	Mountain View	Elk Hills, Buena Vista Hills, Midway-Sunset, Lakeview Area	Lost Hills	Coalinga	Kettleman Hills	Elwood Terrace
14–14.9	....	$0.68	....	....	$0.71	....	....	$0.70	....	$0.70	$0.70	$0.70	$0.72	....	....	$0.73	....	....	....	$0.73	$0.73	$0.73	....	....
15–15.9	....	.71	....	....	.75	$0.76	....	.72	....	.72	.71	.72	.72	....	....		....	....	....	.73	.73	.73	....	....
16–16.9	....	.74	$0.79	....	.79	.79	....	.75	....	.74	.73	.75	.72	....	....		....	....	....	.73	.75	.73	....	....
17–17.9	....	.78	.82	....	.82	.82	....	.78	....	.77	.76	.78	.72	....	....		....	....	....	.75	.78	.73	....	....
18–18.9	$0.80	.82	.86	....	.86	.85	....	.81	....	.80	.79	.82	.74	....	....		....	....	....	.78	.81	.73	....	....
19–19.9	.84	.86	.90	....	.89	.88	....	.85	....	.83	.82	.85	.77	....	....	Wheeler Ridge	....	....	$0.73	.81	.84	.75	....	....
20–20.9	.88	.90	.94	....	.03	.92	$0.80	.88	....	.86	.85	.89	.80	....	....		....	....	.76	.85	.87	.77	....	....
21–21.9	.92	.94	.98	....	.96	.95	.84	.91	....	.89	.89	.92	.84	....	....		....	....	.79	.90	.90	.80	....	....
22–22.9	.96	.98	1.02	$0.88	.99	.98	.87	.95	....	.93	.93	.96	.87	....	....	$0.76	....	....	.83	.94	.93	.83	....	....
23–23.9	1.00	1.02	1.05	.92	1.02	1.01	....	.98	....	.97	.98	1.00	.91	....	....	.80	....	....	.87	.99	.96	.86	....	....
24–24.9	1.03	1.06	1.07	.97	1.05	1.04	F.O.B.	1.01	....	1.01	1.02	1.03	.94	$0.99	....	.83	....	....	.90	1.03	.99	.89	....	....
25–25.9	1.07	1.09	1.10	1.01	1.08	1.07	Our	1.04	....	1.05	1.06	1.07	.98	1.02	....		....	....	.94	1.07	1.01	.92	....	....
26–26.9	1.11	1.12	1.12	1.06	1.11	1.10	Pipe	1.08	....	1.09	1.10	1.11	1.01	1.06	....		....	....	.97	1.11	1.04	.95	....	....
27–27.9	1.15	1.15	1.15	1.10	1.14	1.14	Line	1.11	....	1.13	....	1.15	1.05	1.10	$1.04	....	....	....	1.01	1.15	1.07	.98	....	....
28–28.9	1.18	1.18	1.17	1.15	1.17	1.17	....	1.14	....	1.17	....	....	1.08	1.13	1.08	....	....	....	1.04	1.19	1.10	1.00	....	....
29–29.9	1.20	1.21	....	1.19	1.20	1.20	....	....	$1.17	....	....	....	1.12	1.17	1.12	....	....	....	1.07	1.24	1.13	1.02	....	....
30–30.9	1.23	1.24	....	....	1.23	1.22	....	....	1.21	....	....	....	1.15	1.21	1.15	....	$1.01	$1.09	1.10	1.28	1.16	1.04	....	F.O.B.
31–31.9	....	....	....	....	....	1.24	....	....	1.25	....	....	....	1.19	1.24	1.19	....	1.04	1.12	1.14	....	....	1.06	....	Ship
32–32.9	....	....	....	....	....	....	....	....	1.29	....	....	....	1.23	1.28	1.23	....	1.07	1.14	1.17	....	....	1.09	....	....
33–33.9	....	....	....	....	....	....	....	....	1.32	....	....	....	1.27	....	1.26	....	1.10	1.17	....	....	....	1.11	....	$1.22
34–34.9	....	....	....	....	....	....	....	....	1.36	....	....	....	1.31	....	1.30	....	1.13	1.20	....	....	....	1.13	....	1.25
35–35.9	....	....	....	....	....	....	....	....	....	....	....	....	1.35	....	....	....	1.16	1.22	....	....	....	....	$1.23	1.38
36–36.9	....	....	....	....	....	....	....	....	....	....	....	....	1.39	....	....	....	1.19	1.25	....	....	....	....	1.26	....
37–37.9	....	....	....	....	....	....	....	....	....	....	....	....	1.43	....	....	....	1.22	....	....	....	....	....	1.29	....
38–38.9	....	....	....	....	....	....	....	....	....	....	....	....	1.47	....	....	....	1.25	....	....	....	....	....	....	....
39–39.9	....	....	....	....	....	....	....	....	....	....	....	....	1.51	....	....	....	....	....	....	....	....	....	....	....
40–40.9	....	....	....	....	....	....	....	....	....	....	....	....	1.53	....	....	....	....	....	....	....	....	....	....	....

GRAVITY SCALE CRUDE OIL PRICES OUTSIDE CALIFORNIA

Posted in most instances between May 19 and May 21, 1941

GRAVITY	Oklahoma-Kansas: Stanolind, Gulf, Texas, Shelly, Barnsdall, Tidewater, Sinclair, Phillips	Oklahoma-Kansas: Carter, Magnolia, Shell	North Louisiana-Arkansas: [1]Rodessa, etc.	North Louisiana-Arkansas: [2]Champagnolle, etc.	North Louisiana-Arkansas: Bunkie, Eola, Olla. (by Standard)	North Louisiana-Arkansas: Lisbon, La. (by Gulf)	North Louisiana-Arkansas: [3]Atlanta, Buckner, etc., Ark.	Inland Texas and New Mexico: North and West Central Texas	Inland Texas and New Mexico: [4]Eastern Texas	Inland Texas and New Mexico: West Texas, [17]Panhandle, New Mexico	South Texas: [5]Refugio Type	South Texas: [6]Mirando Type	Texas Gulf Coast: [7]Gulf Coast	Texas Gulf Coast: [8]Anahuac Type	Texas Gulf Coast: [9]Dickinson Type	Louisiana Gulf Coast: [10]Gulf Coast	Louisiana Gulf Coast: [11]Standard of La.	Louisiana Gulf Coast: [12]Texas Co.	Louisiana Gulf Coast: [13]Texas Co.	Louisiana Gulf Coast: [14]Magnolia Pet. Co.	Louisiana Gulf Coast: [15]Shell Oil Co.	Louisiana Gulf Coast: Jennings (by Gulf)	[16]Rocky Mt. Area (Salt Creek, etc.)
17-17.9	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	$0.94	....	....	....
18-18.9	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	.96	....	....	....
19-19.9	....	....	....	....	....	....	....	....	$0.80	$0.70	$1.08	$1.03	$1.06	$0.98	$0.93	$1.06	....	....	....	.98	$0.99	....	....
20-20.9	$0.85	$0.75	....	....	....	....	$0.68	$0.78	.82	.72	1.10	1.05	1.08	1.00	.95	1.08	$0.90	....	....	1.00	1.01	....	....
21-21.9	.87	.78	....	....	....	....	.70	.80	.84	.74	1.12	1.07	1.10	1.02	.97	1.10	.92	....	....	1.02	1.03	....	....
22-22.9	.89	.81	....	....	....	....	.72	.82	.86	.76	1.14	1.09	1.12	1.04	.99	1.12	.94	....	....	1.05	1.05	....	....
23-23.9	.91	.84	....	....	....	....	.74	.84	.88	.78	1.16	1.11	1.14	1.06	1.01	1.14	.96	....	....	1.08	1.07	....	....
24-24.9	.93	.87	$0.88	$0.86	$0.98	....	.76	.86	.90	.80	1.18	1.13	1.16	1.08	1.03	1.16	.98	....	....	1.11	1.09	....	....
25-25.9	.95	.90	.90	.88	1.00	....	.78	.88	.92 .97	.82	1.20	1.15	1.18	1.10	1.05	1.18	1.00	....	....	1.14	1.11	....	....
26-26.9	.97	.93	.92	.90	1.02	....	.80	.90	.99	.84	1.22	1.17	1.20	1.12	1.07	1.20	1.02	....	....	1.17	1.13	....	....
27-27.9	.99	.96	.94	.92	1.04	$0.81	.82	.92	1.01	.86	1.24	1.19	1.22	1.14	1.09	1.22	1.04	....	....	1.19	1.15	....	....
28-28.9	1.01	.99	.96	.94	1.06	.83	.84	.94	1.03	.88	1.26	1.21	1.24	1.16	1.11	1.24	1.06	$1.06	....	1.21	1.17	....	$0.96
29-29.9	1.03	1.02	.98	.96	1.08	.85	.86	.96	1.05	.90	1.28	1.23	1.26	1.18	1.13	1.26	1.08	1.08	....	1.23	1.19	....	.98
30-30.9	1.05	1.05	1.00	.98	1.10	.87	.88	.98	1.07	.92	1.30	1.25	1.28	1.20	1.15	1.28	1.10	1.10	$1.05	1.25	1.21	....	1.00
31-31.9	1.07	1.07	1.02	1.00	1.12	.89	.90	1.00	1.09	.94	1.32	1.27	1.30	1.22	1.17	1.30	1.12	1.12	1.07	1.27	1.23	$1.07	1.02
32-32.9	1.09	1.09	1.04	1.02	1.14	.91	.92	1.02	1.11	.96	1.34	1.29	1.32	1.24	1.19	1.32	1.14	1.14	1.09	1.29	1.25	1.09	1.04
33-33.9	1.11	1.11	1.06	1.04	1.16	.93	.94	1.04	1.13	.98	1.36	1.31	1.34	1.26	1.21	1.34	1.16	1.16	1.11	1.31	1.27	1.11	1.06
34-34.9	1.13	1.13	1.08	1.06	1.18	.95	.96	1.06	1.15	1.00	1.38	1.33	1.36	1.28	1.23	1.36	1.18	1.18	1.13	1.33	1.29	1.13	1.08
35-35.9	1.15	1.15	1.10	1.08	1.20	.97	.98	1.08	1.17	1.02	1.40	1.35	1.38	1.30	1.25	1.38	1.20	1.20	1.15	....	....	1.15	1.10
36-36.9	1.17	1.17	1.12	1.10	1.22	....	1.00	1.10	1.19	1.04	1.42	1.37	1.40	1.32	1.27	1.40	1.22	1.22	1.17	....	....	1.17	1.12
37-37.9	1.19	1.19	1.14	1.12	1.24	....	1.02	1.12	1.21	1.06	1.44	1.39	1.42	1.34	1.29	1.42	1.24	....	1.19	....	....	1.19	1.14
38-38.9	1.21	1.21	1.16	1.14	1.26	....	1.04	1.14	1.23	1.08	1.46	1.41	1.44	1.36	1.31	1.44	1.26	....	1.21	....	....	1.21	1.16
39-39.9	1.23	1.23	1.18	1.16	1.28	....	1.06	1.16	1.25	1.10	1.48	1.43	1.46	1.38	1.33	1.46	1.28	....	1.23	....	....	1.23	1.18
40 & Up	1.25	1.25	1.20	1.18	1.30	....	1.08	1.18	1.2/	1.12	1.50	1.45	1.48	1.40	1.35	1.48	1.30	....	1.25	....	....	1.25	1.20

[1] Gulf schedule for Caddo, Homer, Haynesville, Bull Bayou, Crichton, De Soto, El Dorado and Rodessa, Texas. Standard of La. schedule for Cotton Valley, Rodessa, Shreveport (Cross Lake), Magnolia schedule for Haynesville, Cotton Valley, Rodessa, and Miller Co., Ark. Texas Co. schedule for "North Louisiana."

[2] Schedule of Standard of La. for Caddo, De Soto, Sabine, Fouke, Homer, Miller Co., Sugar Creek. Schedule of Root Petroleum Co. for Nick Springs, Urbana light, Schuler sweet, Rainbow, South Field (El Dorado), and Champagnolle.

[3] Schedule of Standard of La. for Atlanta, Buckner, Magnolia, Schuler: Jones sand, Village. Schedule of Root Petroleum Co. for Schuler: Reynolds lime, and Schuler: Jones sand.

[4] Humble schedule for Anderson, Cherokee, Limestone, and Navarro counties and Navarro Crossing field, except that prices from 80 to 92 cents represent postings only for Hawkins field, Wood County. Rodessa, Texas, prices are same as in Rodessa, La.-Ark.

[5] Schedule for Refugio, E. White Point, Greta, Melon Creek, Midway, Minnie Bock, O'Connor-McFaddin, Plymouth, Saxet, Taft, and Tom O'Connor.

[6] Schedule for Blanchard, Bridwell, Colorado, Comitas, Eagle Hill, Escobas, Fitzsimmons, Glen, Government Wells (N. and S.), Heyser, Hoffman, Kelsey, Kohler, Loma Novia, Lundell, Manila, Mirando Valley, Placedo, Randado, Sarnosa, and Tesoro.

[7] Humble schedule for Amelia, Clear Lake, Goose Creek, Hastings, Magnet, Mykawa, Mykawa new, Raccoon Bend, South Thompsons, Sugarland, Thompsons, Webster. Texas Co. schedule for Arriola, Ganado, Hamman, Hillje, Humble, Kubela, Magnet, Manvel, Markham, Mauritz, Old Ocean, Pickett Ridge, Port Neches, Sour Lake, West Columbia, Withers. Pan American Prod. Co. schedule for Hastings and South Houston. Gulf schedule for Spindle Top, Sour Lake, Lovells Lake, West Beaumont, Goose Creek, South Liberty, Big Creek, Blue Ridge, Fannett, Moore, Barbers Hill, Hankamer, Thompsons, Lochridge, Dyersdale, and Hull (old) crudes. Sun schedule for Barbers Hill, Batson old, Cotton Lake, Esperson below 35 gravity, Goose Creek, Greens Lake, Hull below 25, Humble below 35, Nome, North Dayton below 25, Orange, Saratoga, Sour Lake, South Liberty.

[8] Humble schedule for Anahuac, Angleton, Cedar Point, Fishers' Reef, Hull old and new, Pierce Junction, Red Fish Reef, Turtle Bay fields. Sun schedule for Anahuac, Caplen, and Turtle Bay. Gulf schedule for Anahuac, Hull new. Pierce Junction, Orange and Thompsons deep.

[9] Humble schedule for Dickinson, Gillock, Hardin, League City, and Rowan fields. Pan American Prod. Co. schedule for Gillock crude.

[10] Sun Oil Co. schedule for Bayou Blue, Chacahoula, Fausse Pointe, Hackberry (E. and W.), and Vinton. Texas Co. schedule for Bay St. Elaine, Caillou Island, Iberia, Lake Barrel, Lake Pelto, Leesville and Port Barre for crude ranging in gravity up to 27-27.9; for lighter oils in those fields see Footnote 12. Gulf schedule for Edgerly, Starks, Vinton, E. Hackberry Cameron Meadows, Leesville. Deduct 10 cents for Gulf's prices for Timbalier Bay, Grand Bay, Quarantine Bay, and West Bay. Deduct 2 cents for Standard of La. prices for University (Baton Rouge) crude of 30 to 35.9 gravity.

[11] Standard of La. schedule for Bayou Mallet, Choctaw, Darrow, Jeanerette, Lirette, N. Crowley, S. Crowley, Port Barre, Potash, Roanoke, St. Martinville.

[12] Texas Co. schedule for Bateman Lake, Dog Lake, Gausse Point, Horseshoe Bayou, Jefferson Island, Plumb Bob, Vermilion Bay, West Cote Blanche, and Delta Duck Club. Add 8 cents to these prices for Texas Co. postings for 28 or higher gravity at Bay St. Elaine, Caillou Island, Iberia, Lake Pelto, Leesville, Port Barre, and Lake Barre.

[13] Texas Co. schedule for Delta Farms, Golden Meadows, Lake Salvador.

[14] Magnolia schedule for Lockport, Cameron Meadows, West Gueydan.

[15] Shell Oil Co. schedule at Iowa, Black Bayou, White Castle. For Shell's prices at Roanoke and Chalkley fields deduct 5 cents. For Shell's prices at Gibson, South Houma, Hester, and West Lake Verret fields deduct 10 cents.

[16] Sinclair-Wyoming Oil Co. prices at Salt Creek, Lost Soldier, Iron Creek, effective May 20, 1941. Deduct 10 cents for East Mahoney and deduct 20 cents for Mahoney and Wertz.

[17] Deduct 1 cent for Panhandle prices of Phillips Pet. Co. and Sinclair-Prairie. Add 3 cents for Panhandle prices of Texas Co.

Mid-Continent Flat Prices

FIELD—	Flat Price	Date Posted
Arkansas:		
Big Creek, Dorcheat, McKamie	$1.15	5-22-41
Smackover, Heavy	.83	5-22-41
Louisiana, North:		
Cotton Valley Distillate	1.30	5-22-41
Cotton Valley (Holloway Sand)	1.25	5-22-41
Lisbon Distillate	1.20	5-22-41
Louisiana, South:		
Erath	1.21	5-21-41
Garden Island	1.36	5-21-41
Happytown	1.15	5-20-41
Lafitte, Paradis	1.19	5-21-41
Lake Arthur & Tepetate	1.18	5-21-41
Lake Mongoulois	1.36	5-21-41
Ville Platte	1.20	5-21-41
Texas:		
Alice, Benavides (No. Sweden) Ben Bolt, Clark-Muil, Sun and Tom Graham	1.35	5-21-41
Cayuga	.90	5-21-41
Clay Creek	1.00	5-22-41
Cleveland	1.26	5-21-41
Conroe	1.43	5-21-41
Darst Creek	1.14	5-21-41
Esperson 35 gravity and above and S. Esperson (Sun Oil Co.)	1.30	5-22-41
East Texas, Flag Lake	1.25	5-20-41
Flour Bluff, East Flour Bluff, and La Rosa	1.33	5-21-41
Hockley-Cochran Counties	.87	5-21-41
Livingston, Cleveland	1.25	5-20-41
Long Lake	1.23	5-21-41
Luling	1.05	5-21-41

(Continued in next column)

Mid-Continent Flat Prices

(Continued)

FIELD—	Flat Price	Date Posted
Texas (continued):		
Lytton Springs	1.17	5-21-41
North Rincon	1.35	5-22-41
Salt Flat, North Salt Flat, Darst Creek, Hilbig, Carroll, Clark, Zoboroski	1.14	5-21-41
Satsuma, Tomball	1.40	5-21-41
Sun Oil Co. at Batson (new), Fig Ridge, Hardin, Hull 25 and above, Humble 35 and above, LaBelle, North Dayton 25 and above, Oyster Bayou, Seabreeze, South China, West Orange, and Willow Slough	1.25	5-22-41
South Cotton Lake	1.35	5-22-41
Sun	1.35	5-22-41
Talco	.79	5-21-41
Van	1.08	5-21-41
Yates (Deep)	.95	5-20-41
Yates (Shallow)	.82	5-20-41

Michigan Prices

Central (Basin):		
Porter, Greendale, Crystal, Wise, Midland, Vernon	$1.44	5-27-41
Buckeye, Edenville, Bentley, Beaverton	1.42	5-27-41
Freeman, Lincoln, Sherman Redding, Temple, Winterfield	1.39	5-27-41
Adams, Grade	1.25	5-27-41
Arenac, Clayton, Ogemaw, W. Branch	1.24	5-27-41
Southwest (Shallow):		
Allegan, Bloomingdale, Grand Rapids, Ottawa	1.38	5- 5-41

Middle West Prices

FIELD—	Flat Price	Date Posted
Lima, Ohio	$1.05	4- 1-41
Illinois Basin (Sohio Corp.)	1.37	5-19-41
Lake Centralia-Salem, Illinois	1.37	5-19-41
Eastern Ill.-Western Ind	1.22	5-21-41
Western Kentucky	1.32	5-21-41
Birk City, Western Kentucky	1.32	5-21-41
Kentucky River, Eastern Ky.	1.40	5-21-41
Big Sandy River, Eastern Ky.	1.32	5-21-41

Rocky Mountain States Prices

Colorado:		
Canon City and Florence	$0.95	4- 1-41
Iles	.97	4- 1-41
Montana:		
Cat Creek	1.15	4- 1-41
Cut Bank	1.00	1- 1-40
Dry Creek	1.02	5-20-41
Sunburst	1.00	5-20-41
New Mexico:		
Artesia	.77	10-11-38
Hogback	1.00	10-11-38
Wyoming:		
Big Muddy	1.03	4- 1-41
Byron	.55	10-11-38
Elk Basin	1.00	5-21-41
Frannie, Light	.70	5-20-41
Frannie, Heavy	.47	5-20-41
Garland	.50	10-11-38
Grass Creek, Light	1.00	5- 1-41
Grass Creek, Heavy	.50	5-20-41
Hamilton Dome	.45	5-20-41
Lance Creek (Ohio Oil Co.)	.92	5- 1-41
Lance Creek (Stanolind)	.92	5-20-41
Mill Creek	.72	10-11-38
Oregon Basin	.40	4-20-40
Osage	1.30	10-11-38
Poison Spider	.59	10-11-38
Rocky River	1.15	5-21-41
Tensleep	.6515	2- 1-41

Refineries Busy in Meeting Demand; Oil Moves to East

Operations of the industry continue well balanced with market requirements, and currently, the tanker scarcity is not being reflected in any failure of gasoline and fuel oils to move out of the Gulf Coast and into the Atlantic Coast market.

In response to record-breaking demand for gasoline, refinery runs again were increased to a new high in the week ended May 24. They averaged 3,867,000 barrels daily, up 62,000 barrels from the previous week's rate and 46,000 barrels above the former all-time record, set two weeks previously. The runs at the latest rate were 7.2 percent greater than the daily average maintained in May of last year.

Production of gasoline aggregated 12,866,000 barrels for the week, equivalent to a daily average 210,000 barrels higher than that of May last year.

Stocks of gasoline in the United States decreased only a slight amount, from 94,867,000 to 94,811,000 barrels, in reflection of the increased refinery throughput of crude.

The inventory on the East Coast was increased from 20,587,000 to 21,157,000 barrels, and that in the Appalachian region rose from 2,852,000 to 2,957,000 barrels, although the stocks in the Indiana-Illinois-Kentucky region were lowered from 17,852,000 to 17,700,000 barrels. On the Texas Gulf Coast, stocks decreased from 15,064,000 to 14,630,000 barrels, although those on the Louisiana Gulf Coast rose from 3,435,000 to 3,489,000 barrels.

The present total storage of gasoline is nearly 7,000,000 barrels (6.6 percent) smaller than that on hand a year ago. However, aviation gasoline, included in the totals, is in storage now in an amount 2,000,000 barrels larger than a year ago, and the present stocks of ordinary gasoline (87,419,000 barrels) are 8,711,000 barrels smaller than those held at this time last year (96,130,000 barrels), a decrease of 9 percent, which contrasts with an increase of over 10 percent in gasoline demand since a year ago.

Stocks of residual fuel oil were drawn upon to the extent of about 200,000 barrels in the week ended May 24, having come down from 93,987,000 to 93,774,000 barrels. However, the withdrawal was almost wholly on the Pacific Coast. In fact, California stocks were reduced 651,000 barrels, while those outside California were increased about 450,000 barrels. Those on the East Coast rose from 8,156,000 to 8,467,000 barrels, and those in the Indiana-Illinois-Kentucky area from 3,429,000 to 3,479,000 barrels. Stocks increased a little on the Texas Gulf Coast, but were reduced on the Louisiana Gulf Coast.

Light fuel oils continued to go to storage in satisfactory volume. Stocks rose within the week from 31,882,000 to 33,102,000 barrels, and at the latter level were 21 percent larger than a year previously. The storage of gas oil and distillate on the East Coast increased from 8,897,000 to 9,122,000 barrels, that in the Appalachian region from 337,000 to 379,000 barrels, in the Indiana-Illinois-Kentucky area from 2,758,000 to 2,883,000 barrels, in the Oklahoma-Kansas district from 1,257,000 to 1,284,000 barrels. On the Texas Gulf Coast, stocks rose from 5,620,000 to 6,043,000 barrels, while on the Louisiana Gulf Coast they increased from 1,168,000 to 1,233,000 barrels.

Trends of Operations and Changes in Stocks

Figures are from American Petroleum Institute weekly reports, except those on crude stocks, which are from Bureau of Mines weekly reports

WEEK ENDED	Crude Oil Production (Barrels Daily)	Crude Runs to Stills (Barrels Daily)	Crude Oil Stocks (Barrels)	Gasoline Stocks (Barrels)	FUEL OIL STOCKS	
					Gas Oil & Dist. Fuels	Residual Fuel Oil
1938:						
November 12	3,243,250	3,180,000	273,394,000	[6]67,551,000	34,175,000	120,491,000
December 10	3,245,100	3,150,000	[2]269,509,000	68,687,000	32,068,000	118,711,000
1939:						
April 22	3,526,700	3,280,000	277,156,000	[2]87,769,000	21,085,000	105,035,000
April 29	3,568,200	3,405,000	278,440,000	86,794,000	[7]25,844,000	[7]108,409,000
May 6	3,580,900	3,275,000	[3]278,607,000	86,216,000	26,167,000	108,597,000
August 5	[1]3,909,400	3,445,000	268,982,000	76,431,000	35,601,000	114,512,000
August 26	[5]1,690,800	3,475,000	246,982,000	73,475,000	37,722,000	116,237,000
October 7	3,435,850	3,505,000	231,564,000	[6]71,152,000	38,549,000	114,397,000
October 21	3,771,550	[2]3,650,000	[3]229,127,000	72,122,000	39,358,000	115,060,000
1940:						
January 27	3,611,600	3,470,000	237,339,000	87,914,000	27,407,000	103,015,000
February 24	3,732,100	3,490,000	240,836,000	96,719,000	25,390,000	103,419,000
March 30	3,841,250	3,585,000	250,561,000	101,370,000	23,778,000	105,081,000
April 20	3,858,550	3,535,000	254,881,000	[4]102,817,000	24,779,000	103,323,000
April 27	3,845,250	3,555,000	256,670,000	102,452,000	24,997,000	102,552,000
May 25	3,835,650	3,580,000	259,330,000	100,297,000	28,356,000	104,015,000
June 22	3,846,450	[2]3,690,000	260,891,000	97,276,000	32,751,000	104,683,000
June 29	3,639,550	3,625,000	262,059,000	95,142,000	33,590,000	104,486,000
July 27	3,690,400	3,555,000	262,579,000	90,173,000	38,981,000	105,924,000
August 31	3,501,350	3,575,000	265,865,000	85,393,000	44,766,000	108,774,000
September 28	3,799,950	3,600,000	263,609,000	82,273,000	47,986,000	108,450,000
October 26	3,640,300	3,565,000	262,746,000	80,891,000	[1]48,893,000	108,475,000
November 9	3,584,200	3,510,000	261,631,000	[6]79,847,000	48,408,000	107,687,000
November 30	3,335,050	3,510,000	262,679,000	80,284,000	46,212,000	106,618,000
December 28	3,385,500	3,585,000	261,552,000	83,274,000	42,266,000	102,620,000
1941:						
January 25	3,599,100	3,625,000	260,093,000	88,762,000	39,039,000	100,297,000
February 22	3,629,650	3,590,000	261,783,000	93,812,000	34,381,000	98,631,000
March 1	3,632,250	3,585,000	263,176,000	96,917,000	33,725,000	97,510,000
March 29	3,746,550	3,625,000	266,187,000	[2]99,727,000	29,949,000	96,152,000
April 26	3,726,850	3,675,000	266,149,000	96,647,000	29,543,000	94,732,000
May 3	3,507,100	3,735,000	265,728,000	96,328,000	30,309,000	94,414,000
May 10	3,756,100	3,821,000	263,994,000	95,703,000	31,548,000	94,407,000
May 17	3,784,450	3,805,000	262,645,000	94,867,000	31,882,000	93,987,000
May 24, 1941	3,772,850	[1]3,867,000	.....	94,811,000	33,102,000	93,774,000
May 24, 1940	3,835,650	[8]3,607,000	[4]257,647,000	101,557,000	27,413,000	102,932,000
Change in past year	—1.6%	+7.2%	+2.0%	—6.6%	+20.8%	—9.0%

[1] All time peak. [2] Peak for year. [3] Lowest since April, 1922. [4] Stocks, May 18, 1940. [5] Lowest since October, 1922, due to shut down of six mid-continent states. [6] Lowest for year. [7] Prior to April 29, 1939, data did not include stocks at terminals, in transit, etc., except in California. [8] May, 1940, daily average.

Prices of Refined Products And Crude Oils Advanced

The upward movement of prices of refined products and crude oil continued last week, although recent developments in Washington indicated that the government henceforth will keep close watch over prices in the industry and discourage any additional advances.

Refiners and resellers of the Mid-Continent and the Middle West last week were asking from ⅛- to ⅜-cent a gallon more than a week previously for gasoline of low- and medium-octane grades, and prices were up as much as ⅝-cent on high-octane material.

Higher octane gasoline also was marked up ⅛- to ¼-cent a gallon on the Gulf Coast.

On the Atlantic Coast, prices were generally unchanged following a ½-cent advance of the previous week.

Natural gasoline also was strong and was priced ⅛-cent a gallon higher than a week previously.

Minimum quotations on kerosene were ⅛-cent higher last week than in the previous week in the Mid-Continent and the Middle West, but prices held steady on the East Coast.

Light fuel oils, similarly, were advanced generally ⅛-cent a gallon in the Mid-Continent refining district and in the refining and marketing area of the Middle West, while quotations held unchanged on the Atlantic seaboard.

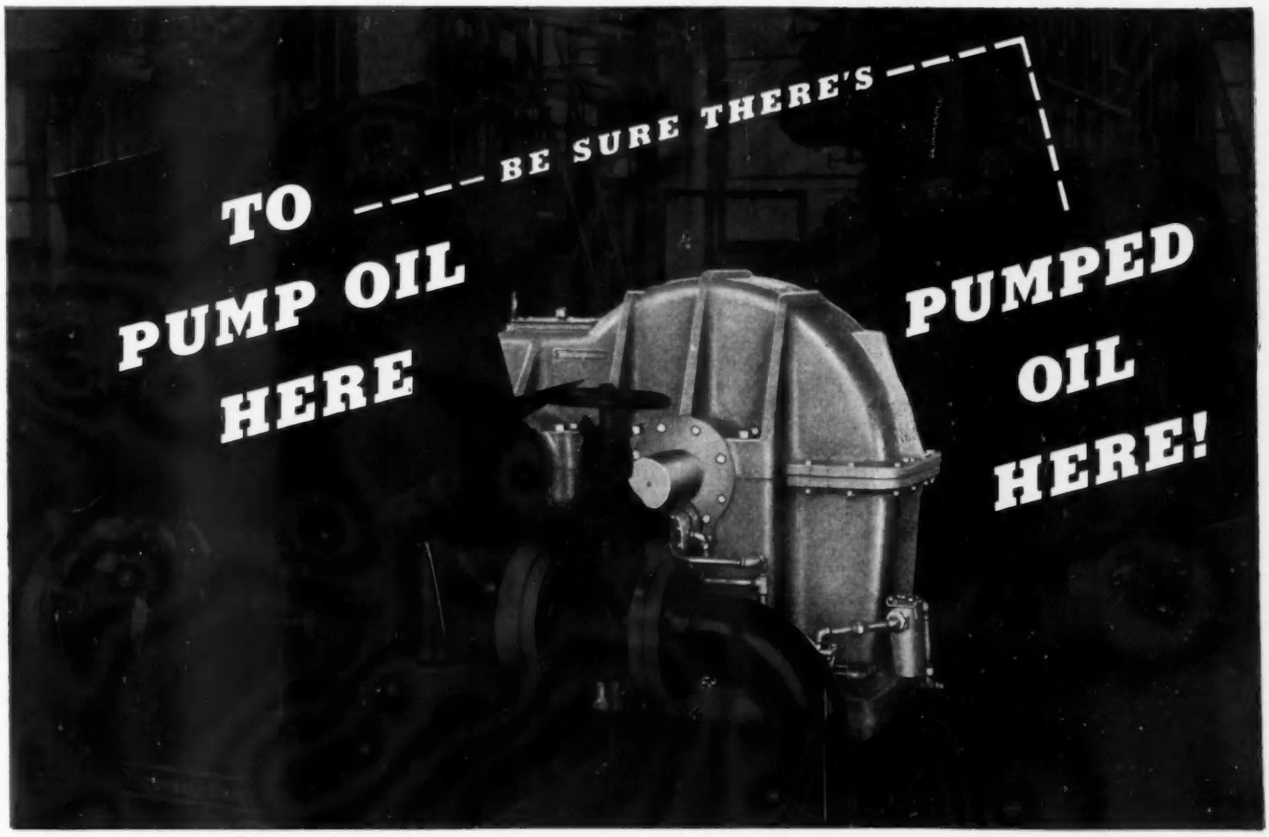
Prices of heavy fuel oils and of bunker oil, meanwhile, remained the same as previously, despite good demand.

Lubricants continued in strong demand at advancing prices. Quotations of some Mid-Continent refiners were ½- to 1-cent a gallon higher on bright stocks and a whole cent higher on neutrals.

In the Western Pennsylvania refining area, both lows and highs of price ranges were up 1 cent on both bright stocks and neutral oils, as plant owners found difficulty in taking care of orders.

Michigan Crude Raised

Leading buyers in central Michigan posted 5- to 7-cent advances for crude oil effective May 27 to establish $1.44 oil in the basin the first time since 1929. The new peak is 2 cents higher than that reached in late 1936 during a local oil shortage, and just before the Buckeye boom. From a high of $1.42 in late 1936, prices rapidly fell away to hit a low of 68 cents for 3900-foot basin production in 1938, exclusive of hot oil that

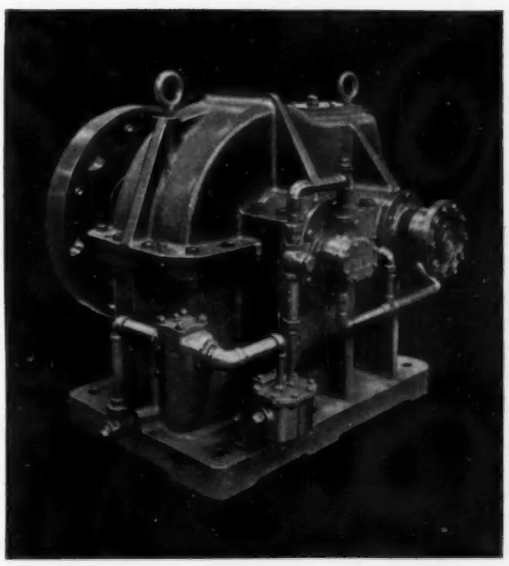


PRESSURE-LUBRICATED SPEED INCREASERS INSURE LONG-LIFE DRIVES

For oil to flow dependably through pipe lines, oil must flow dependably to the high-speed gears that drive the pumps. Westinghouse Speed Increasers insure quiet, continuous operation for pumps, compressors and similar equipment, because their lubrication is insured by positive pressure feed.

Oil pumped constantly against the mesh line of the gears prevents gears or bearings from ever running dry. All parts of the circulating lubrication system are externally mounted and easily accessible.

Westinghouse Speed Increasers are individually designed to exact requirements of prime mover and the machine they are to drive. They can be used to increase output speeds of Diesel engines, gas engines or electric motors. Write for booklet DD-3650 containing details and application data. Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., Dept. 7-N.



Westinghouse Type SU-14-8 Speed Increaser showing forced-feed lubrication system with pump, cooler and strainer externally mounted.

J-07188

Westinghouse **Geared Drives**

Wholesale Prices of Refined Products in Principal Markets

REFINED GASOLINE	Range Last Week (Cents a gal.)		Changes from Week Before	
Oklahoma Refineries:				
60 Octane and under	4 7/8	5 3/8	+3/8	+1/2
63-66 Octane	5 1/4	5 3/4	+3/8	+1/2
72-74 Octane	5 5/8	6 1/4	+3/8	+1/2
80-82 Octane, Ethyl	6 1/4	7 1/4	+3/8	+5/8
Mid-Western Tank Car:				
60 Octane and under	4 3/4	5 1/4	+1/4	...
63-66 Octane	5 1/8	5 5/8	+1/4	...
72-74 Octane	5 5/8	6 1/8	+3/8	+1/2
80-82 Octane, Ethyl	6 7/8	6 7/8	+1/2	+1/2
New York Harbor:				
68-70 Octane	7 1/2	7 1/2	...	...
72-74 Octane	7 1/2	8	...	...
Min. 80 Octane, '39 Research	8	8 1/2	...	...
Gulf Coast:				
60 Octane unleaded	5	5 1/4	...	...
65 Octane unleaded	5 1/4	5 1/2	...	...
68 Octane unleaded	5 5/8	6	...	...
70 Octane unleaded	5 3/4	6	...	...
72-74 Octane leaded	5 5/8	6	+1/8	+1/4
Min. 80 Octane, '39 Research	5 5/8	6 1/4	...	+1/4
NATURAL GASOLINE				
Grade 26-70:				
F.O.B. Group 3	3 3/8	3 3/8	+1/8	—1/8
F.O.B. Breckenr'ge, Tex. 3	3 1/8	...	...	+1/8
KEROSENE				
Oklahoma Refineries:				
41-43 water white	4 3/8	4 3/8	+1/8	...
42-44 water white	4 1/2	4 7/8	+1/8	...
Mid-Western Tank Car:				
41-43 water white	4 3/8	4 3/4	+1/8	...
42-44 water white	4 1/2	4 7/8	+1/8	...
New York Harbor	5 1/4	5 1/4	...	...
RANGE OIL				
At Oklahoma Refineries	4	4 1/8	+1/8	+1/4
In Mid-Western Market Group 3, basis	4	4	+1/8	+1/8
LIGHT FUEL OILS				
Oklahoma Refineries:				
No 1 straw	3 1/2	4 1/4	+1/8	+3/8
No. 3	3 3/8	3 5/8	+1/8	+1/8
Mid-Western Tank Car:				
No. 1 white	3 3/4	4 1/8	...	+1/8
No. 3	3 1/4	3 1/2	...	+1/8
New York Harbor:				
No. 1	5 1/4	5 1/4	...	...
No. 3	4 7/8	4 7/8	...	...

HEAVY FUELS	Range Last week (Per Bbl)		Changes from week Before	
Oklahoma Refineries:				
No. 6	$0.70	$0.80	...	...
Mid-Western Tank Car:				
No. 5	.85	.85	...	...
No. 6	.80	.85	...	...
New York Harbor:				
No. 5	1.55	1.65	...	...
No. 6	1.25	1.35	...	...
BUNKER C FUEL OIL (Per barrel, ships' bunkers)				
Gulf Coast	$ .85	$ .90	...	...
New York Harbor	1.25	1.35	...	...
DIESEL OIL (Per barrel, ships' bunkers)				
Gulf Coast	$1.45	$1.50	...	...
New York Harbor	2.00	2.00	...	...
Los Angeles Basin, 27 gravity	1.20	1.25	+.10	+.10
LUBRICATING OIL (Cents a gal.)				
Oklahoma Refineries:				
Bright Stock, 150-160 viscosity at 210°, 10-25 pour test	16 1/2	17 1/2	+1/2	+1
Neutral oil pale No. 3 color, 150 viscosity at 100°, 0-10 pour test	9 1/2	11 1/4	...	+1
Western Pennsylvania:				
Bright Stock, 145-155 viscosity at 210°, 25 pour test	20	21	+1	+1
Neutral Oil No. 3 color, 150 viscosity at 70°, 25 pour test	27	29	+1	+1

moved out at 40 to 50 cents from shallow fields in southwestern Michigan.

The May 27 advance was the second for the month and represented a 32-cent increase since January 1.

Bay Pipe Line Corporation May 27 raised postings 5 to 7 cents a barrel, increasing Wise and Saginaw 7 cents to $1.44; Buckey, Bentley and Kawkawlin 7 cents to $1.42; Clare 5 cents to $1.11, and Adams 5 cents to $1.25.

The Pure Oil Company increased by 7 cents its prices for Michigan crude, effective May 27, having posted $1.44 for Midland and $1.39 for Sherman.

Simrall Corporation, subsidiary of Standard Oil Company of Ohio, through a 7-cent advance effective May 27, raised prices to $1.44 for Greendale, Porter, Vernon, Crystal and Wise; to $1.42 for Buckeye, Bentley, Edenville, Beaverton and Monitor (sweet crude type); to $1.39 for Freeman, Redding, Lincoln and Winterfield; to $1.24 for West Branch-Arenac, and to $1.29 for Hamilton-Grout.

The Michigan advance affected all basin grades or about 65 percent of the state's output. No changes were announced by buyers in western Michigan where $1.38 oil has prevailed since May 5.

Continued shortage of supply to meet independent refinery demand and a rebalancing of prices with Illinois following a 10-cent raise in that state last week was cited as responsible for the new advance.

California Postings Advanced

The third crude oil price adjustment so far this year was made by Standard

United States Crude Output Slightly Decreases

Estimates Compiled by The OIL WEEKLY

DISTRICT OR STATE	Bureau of Mines Estimate of Daily Demand (May)	State Allowable (Barrels Daily in May)	BARRELS DAILY FOR WEEK ENDED May 24	May 31
TEXAS:				
Texas Panhandle	.....	.....	76,700	78,100
North Texas	.....	.....	99,500	99,600
West Central Texas	.....	.....	30,200	30,100
West Texas	.....	.....	258,600	258,700
East Central Texas	.....	.....	79,200	78,900
East Texas Field	.....	.....	374,100	374,200
South Texas	.....	.....	210,300	210,300
Texas Gulf Coast	.....	.....	275,700	275,500
Total Texas	1,382,200	1,367,619‡	1,404,300	1,405,400
CALIFORNIA:				
Long Beach	.....	.....	41,900	43,300
Midway-Sunset	.....	.....	40,300	43,100
Kettleman Hills	.....	.....	41,300	35,800
Wilmington	.....	.....	85,600	81,400
Others	.....	.....	412,600	422,100
Total California	598,100	571,000*	621,700	625,700
OKLAHOMA:				
Oklahoma City	.....	.....	88,700	87,800
Seminole Area	.....	.....	107,500	107,650
Others	.....	.....	217,425	217,975
Total Oklahoma	440,000	400,000	413,625	413,425
ILLINOIS:				
Salem	.....	.....	91,200	91,000
Louden	.....	.....	60,100	60,000
Centralia	.....	.....	10,900	10,500
Other New Pools	.....	.....	149,500	146,900
Old Pools	.....	.....	10,700	11,800
Total Illinois	336,100	.....	322,400	320,200

DISTRICT OR STATE	Bureau of Mines Estimate of Daily Demand (May)	State Allowable (Barrels Daily in May)	BARRELS DAILY FOR WEEK ENDED May 24	May 31
LOUISIANA:				
North Louisiana	.....	.....	73,100	73,300
South Louisiana	.....	.....	246,500	252,500
Total Louisiana	320,300	320,324	319,600	325,800
KANSAS	213,900	217,900	216,950	208,900
NEW MEXICO	113,900	114,000	113,800	113,300
EASTERN STATES:				
Pennsylvania Grade	49,100	.....	72,200	71,500
Others, Eastern	53,200	.....	19,100	19,000
Total Eastern States	102,300	.....	91,300	90,500
MOUNTAIN STATES:				
Wyoming	90,900	.....	81,500	81,300
Montana	21,300	.....	19,000	19,100
Colorado	5,200	.....	5,200	3,800
Total Mountain States	117,400	.....	105,700	104,200
MICHIGAN	40,000	36,000†	38,100	37,800
INDIANA	23,900	.....	20,200	20,500
ARKANSAS	83,900	76,673	73,600	73,400
MISSISSIPPI	22,900	.....	27,500	25,700
NEBRASKA	4,800	.....	4,300	4,350
§Total 8 Prorated States	3,192,300	3,103,516	3,201,675	3,203,725
Total United States	3,799,700	.....	3,773,075	3,769,175

* Recommendation of Conservation Committee of California Oil Producers.
† Estimate of actual production under prescribed regulations, which do not fix a definite state total allowable.
§ Texas, California, Oklahoma, Louisiana, Kansas, New Mexico, Arkansas, Michigan.
‡ Texas State Railroad Commission's estimate of actual net daily production allowing for usual under-production of 3½ percent under net allowable, which at beginning of May is calculated at 1,417,222 barrels daily. However, allowable normally increases as new wells are completed. Under May order, most Texas fields were ordered shut down May 3, 4, 10, 11, 17, 18, 24, 25 and 31. Texas Panhandle was ordered shut down May 10, 17, 24 and 31.

Oil Company of California May 23, the latest increase having advanced prices on some gravities as much as 12 cents a barrel. The increase for 27-gravity Signal Hill crude was 6 cents, and placed that grade at $1.15 a barrel. For many years the price on this gravity has been considered the base figure for California fields.

At the same time, the company also advanced the retail price on all grades of gasoline ½-cent a gallon, the new posting on regular grade being 18 cents a gallon. This is the second gasoline price increase since the turn of the year, a ½-cent increase in all grades having been made April 24.

All major marketers followed the mark-up in retail gasoline prices, and, while official announcements were lacking, other purchasers were expected to extend the adjustment to crude purchases.

The crude price increase raised the quotation on crude oil to the highest level obtaining in California since March 10, 1931, when the posted price on 27-gravity Signal Hill crude was cut from $1.26 to 77 cents. Since that date, there have been 14 revisions in the state's price structure, with the base quotation for most of the period at less than $1 a barrel. The low was 44 cents a barrel, which obtained from March 30 to June 19, 1931, when it was revised upward to 75 cents.

For the past five-year period, price changes on 27-gravity Signal Hill crude in California have been from 90 cents to $1.10 on March 7, 1936; a cut of 7 cents to $1.03 on February 1, 1940; an advance of 6 cents to $1.09 on April 24, 1941, and a 6-cent advance to $1.15 on May 24, 1941.

Higher price postings on both crude oil and gasoline in the Pacific Coast territory practically coincide with recent upward revisions announced by practically all companies in this area in pay rolls. There are some 65,000 oil-industry workers in California, most of whom have benefited by pay-roll increases within the past 30 days. The crude price advance also follows a concerted drive by the state's heavy oil producers for greater realization on their production. They have argued that the previous price did not permit profitable operations, nor provide an opportunity to maintain efficient producing operations.

Currently, the Pacific area is experiencing the highest motor fuel demand in its history.

Production of Crude Oil Changes Only Nominally

United States crude oil production averaged 3,769,175 barrels daily in the week ended May 31, having changed only 3900 barrels—on the downward side—from output in the previous week. The new rate was 30,000 barrels under daily average market demand for domestic crude in May, as estimated by the United States Bureau of mines.

All states produced at nearly the same levels as in the preceding week. The largest change was a decrease of about 8000 barrels in Kansas, and the next largest was a 6000-barrel increase in Louisiana. California output was up 4000 barrels. Texas was up 1100 barrels. Oklahoma showed a 200-barrel decrease. Illinois production was off 2200 barrels. Mississippi registered an 1800-barrel decline.

World-Wide Developments

Australia Pushes Oil Search; Alcohol Production Speeded

Two of the world's largest oil companies are engaged in a search for petroleum in Australia, one working in Queensland and the other in Western Australia, Interior Minister Hattil Spencer Foll announced last week.

Other companies, including an American firm, are spending large sums in a similar search in New Guinea, while Australian concerns are prospecting in Western Australia and Victoria.

The federal government facilitated operation of the large companies with respect to legislation passed by the states, but it was also safeguarding Australian rights, Foll said.

Efforts to discover free petroleum are coinciding with production of oil from shale and plans to produce power alcohol from primary products. The Power Alcohol Committee has submitted a report to the government recommending a long range program aiming at production of $50,000,000 gallons annually. The alcohol would be blended with gasoline for motor fuel. The committee recommended the fullest use to be made of existing plants to double present output of 3,000,000 or 4,000,000 gallons.

Canada May Advance Funds For Private Oil Exploration

Possibility that Canadian government funds may be loaned to private enterprises to finance drilling tests of promising crude oil structures in Alberta was held forth in Calgary oil circles recently.

Considerable significance was taken from announcement by G. R. Cottrelle, Dominion oil controller, that the Federal Minister of Natural Resources has loaned him the services of Dr. George S. Hume, head of the Dominion Geological Survey, to aid in a new search for oil.

Among the extensive powers given Mr. Cottrelle as oil controller are the following: "Subject to the approval of the governor-in-council, to advance money to any person, firm or corporation to engage in the business of mining, drilling for, producing, processing, refining, storage or transportation of oil."

Oil operators agree with a statement of Cottrelle that new wells in Alberta are not as good as the original ones, on the whole, and that production is going down while consumption is going up.

They point out, however, that the decline in production from Turner Valley wells of late is very slight, and Alberta is producing around 27,000 barrels of oil daily. The yield for the first four months of this year was larger, by a considerable margin, than production for any corresponding period in the oil history of Alberta and Canada.

In the north end of Turner Valley, large wells have been brought in recently, and it is indicated that production will be maintained at wells in this area for a very long time.

It is admitted that wildcat operations in Alberta have not proven very successful. All producing wells outside Turner Valley have a combined yield of not more than 100 barrels of oil daily at present.

The situation at the new Princess field is still obscure, and productivity of this area will not be determined until tests under way to lower gas/oil ratios and cement off water intrusion at completed wells are concluded.

Because of a considerable number of expensive failures, private capital has evidenced a reluctance of late to drill wells on promising structures in Alberta outside Turner Valley. Government loans would probably overcome this reluctance.

While there are 28 wells actually drilling in Turney Valley, according to the last report of the Alberta Conservation Board, only six are drilling in other fields of Alberta.

This is in spite of statements by outstanding geologists that there are many areas in Alberta from which prolific crude production may be expected.

Spud Second Test on Meyer C. Concession

Venezuelan Petroleum Company has spudded the second test on the Meyer C concession in Monagas, Eastern Venezuela, one mile north of Santa Barbara 1, the discovery. Tentative locations for six other wells have been made. Officials in New York declare plans for a pipe line from the property have not yet been made. A report that a pipe line running to Standard Oil Company of Venezuela's line from the Jusepin field to Caripito will be built is declared incorrect.

Mene Grande Oil Company last week was perforating Leona 4 at 6276 feet in the Leona field of eastern Venezuela. Leona M-2 was drilling and coring at 7232 feet. Santa Rosa M-1, a new test in the Santa Rosa vicinity, was drilling at 1703 feet. The company's Quiamara 1, wildcat 32 miles north of El Roble field, was drilling and coring at 5909 feet ten days ago.

Russian Agency May Stop Oil-Field Equipment Buying

Information from New York oil-field equipment men indicates that Amtorg, the Russian commercial agency in New York, is considering discontinuing its operations in the American market. Although Amtorg officials have withheld comment, several equipment men have declared the organization may reach final decision shortly.

One exporter reported increasing difficulty in obtaining permits for exportation of oil-field equipment to Russia has brought his Russian business virtually to a standstill. Another reports a similar difficulty.

Following a recent press story that Washington had decided to ban exports of all machinery and equipment to Russia which might be listed under the heading of national defense, an inquiry was made at the New York offices of the Bureau of Foreign and Domestic Commerce. Officials there said no blanket ban on exports of oil-field machinery to Russia had been imposed, but that individual applications for export permits were still being considered on their merits.

BRING 'EM IN TAME

With the Cameron Closed Pressure Method of Well Completion

The following six steps briefly define the interrelation and function of each unit of Cameron equipment utilized by this, the industry's safest method of well completion.

STEP ONE—After oil string is cemented, Cameron Ram-Type Tubing Control Head is flanged to casing head. When equipped with rams of proper size to close on drilling-in string, this control head provides complete blowout protection during drilling-in operations and many operators use only a Cameron Pressure Operated Master Valve as auxiliary control equipment. Ram-Type Tubing Control Head is permanent part of installation, and therefore any desired connections may be installed at this time.

STEP TWO—If full opening tubing master valve is to be part of tree, all drilling-in operations may be done through assembled tree; otherwise, any bottom hole equipment that will not pass through tubing master valve is run in hole with few joints of tubing and hanger nipple with back pressure valve is made up in string and suspended on closed rams of control head. Drilling-in control equipment may now be removed inasmuch as tubing is closed by back pressure valve and annular space between tubing and oil string is sealed by rams of tubing head.

STEP THREE—Upper section of tree is installed with Cameron Type SBR Ram-Type Stuffing Box on top. Hanger nipple is removed, tubing is run to bottom and hanger nipple is made up in string at desired suspension point. The two sets of rams permit running tubing under pressure, if necessary, and washing well completely clean in absolute safety. Before washing operations are started, releasable back pressure valve with strainer is made up on landing joint.

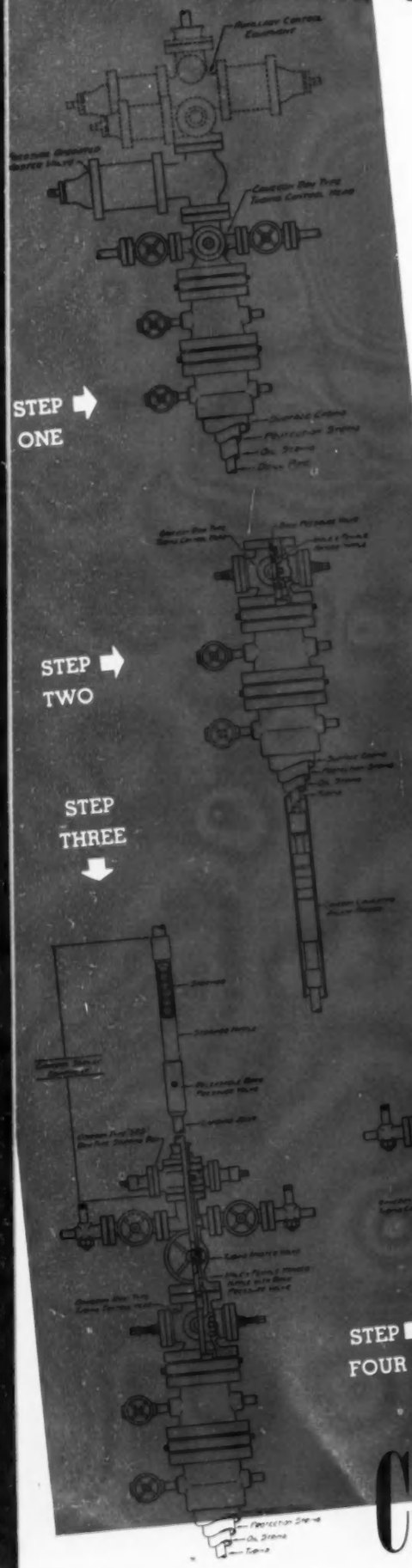
STEP FOUR—After washing and collapsing packer, if one is to be set, rams of tubing head are closed on hanger nipple which suspends and seals tubing string. Pressure above hanger nipple back pressure valve is bled off through releasable back pressure valve, landing joint is backed out of hanger nipple, and ram-type stuffing box and washing-in equipment are removed.

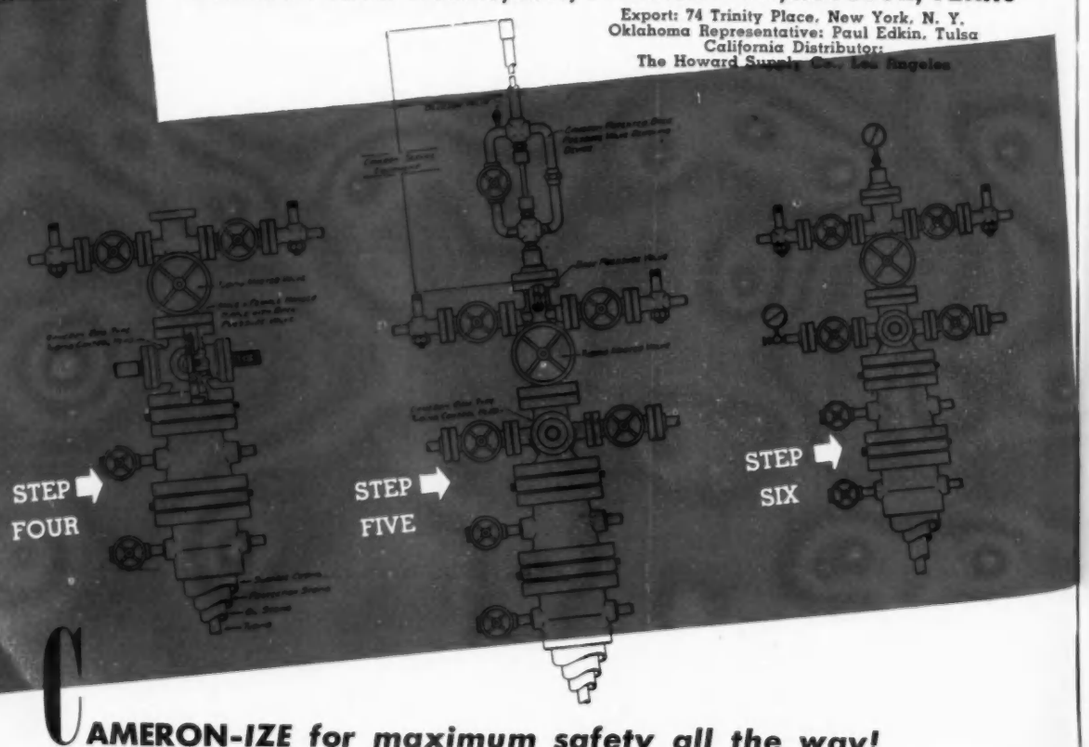
STEP FIVE—Cameron Patented Back Pressure Valve Removing Tool is installed for retrieving hanger nipple back pressure valve, as illustrated below.

STEP SIX—The final step in the Cameron Closed Pressure Method of Well Completion consists simply of replacing the back pressure valve removing device with top flange of Xmas tree and opening tubing master valve.

The Cameron Ram-Type Tubing Control Head, which is generally used in this method of well completion, costs little, if any, more than a "set screw" type tubing head, yet it is extremely practical and convenient in that it permits making squeeze jobs without setting a retainer and permits tubing string to be raised, lowered, or pulled under pressure. The well may be re-entered at any time without killing by following the above sequence of operations in reverse order.

Note—The services of an experienced operator and the Cameron service equipment required for these operations are furnished without charge in domestic fields where a factory representative is maintained.





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Illinois-Indiana

First Benoist Sand Oil Obtained in Effingham County

Effingham County was given its first Benoist-sand production last week by Lynch & Jackson's Burk 1, W½ SE NW 26-6n-5e, a mile south of the Mason pool where production is from McClosky lime. Burk 1 swabbed 119 barrels of oil in 16 hours at 2274-2302 feet without a shot. A pumping unit was being installed.

Saline County's chances for production were buoyed again, with recovery of 14 feet of good saturation at a wildcat, Potter's Sutton 1, SE SE SW 28-8s-7e, southeast of Eldorado. Sutton 1 was to be drilled in over the weekend to test Palestine saturation at 1945-59 feet. Total depth is 1966 feet. The test is 2½ miles southeast of Thompson Drilling Company's Carter 1, now shut down on orders, which unsuccessfully tested a show of Waltersburg oil.

A link between the Calvin and New Harmony fields of White County appeared assured after casing was cemented to promising Aux Vases saturation at Fotiades & Compton's Wilma Gray 1, NE SW SW 21-4s-14w. Saturation was found at 2836-57 feet. The test is ½-mile south of production in the Calvin field and ¾-mile northwest of production in the New Harmony pool. At an elevation of 375 feet, the test found some saturation in Cypress at 2600-23 feet, but on a drill-stem test 1000 feet of salt water showed.

Two pool openers previously announced were given initial production tests. Sackett's Ellis 1, NE SW SE 11-7s-8e, two miles west of Roland, flowed 368 barrels in 24 hours from Waltersburg sand at 2145-60 feet, natural. In Clay County, Carl Robinson's Tolliver 1, SW NW SE 26-4n-7e, swabbed 58.8 barrels of 40.6-gravity oil in five hours following a 10-quart shot at 2331-41 feet. Before the shot, the well swabbed 103 barrels of oil and 16 barrels of water in 24 hours. The water content remained unchanged after the shot.

A new field was opened in Lawrence County with completion of Chet Evarts J. C. Catt 1, SW SE SW 23-2n-12w, three miles north of production in the Allendale field of Wabash County, initialing about 50 barrels a day from Biehl sand at 1379-94 feet. Evarts was spudding a south offset, Seidler 1, a Benoist test.

Louden Deep Tests

In the wake of Whisenand & Trenchard's Devonian discovery in the Louden field of Fayette County, six new deep tests have been started. The discovery well, Lilly 25-D, NW NE 16-8n-3e, flowed 1916 barrels in 22 hours and 50 minutes through 5/8-inch choke but is now allowed to produce but about 600 barrels a day. Three miles south of the well, Jarvis Brothers and Marcell's Sinclair 1-D, NW NE 29-8n-3e, was still being swabbed, producing about 400 barrels of fluid in 24 hours of which 20 to 30 percent was water. The same operator's Yakey 1-D, NW SE 6-7n-3e, was drilling at 3175 feet after a drill-stem test with packer set at 3150 feet showed 920 feet of salt water in 30 minutes. New Devonian tests included The Carter Oil Company's Dunaway 6-D, C W½ NE NE 29-8n-3e, east offset to Sinclair's 1-D, the company's J. E. Wright 12-D, E½ NW NE 21-8n-3e, and the company's Mary Curray 5-D, W½ NE NE 21-8n-3e. Oil Inc. was drilling two offsets to the Whisenant & Trenchard producer. Extent of the Devonian formation's productive possibilities will be considerably under the upper sand horizons which extend 14 miles by three miles in a northeast-southwest direction. Three open tests have penetrated the Devonian, while The Carter Oil Company has drilled a number of stratigraphic tests for geologic information. Two of the open tests were dry, while one at the extreme north end of the pool showed 50 barrels initially. The Carter Oil Company owns approximately 85 percent of the producing properties.

What was believed to be another pool opener in White County, Salee Brothers' Doerr Estate 1, NE NE SE 21-4s-9e, was plugged after the flow of oil was replaced entirely by salt water. The test flowed 50 barrels of oil in eight hours after an acid treatment in McClosky lime at 3269-74 and 3289-92 feet, but the oil gradually diminished and was replaced by water.

Casing has been cemented at a Franklin County wildcat, E. S. Adkins' Old Ben Coal Company 1-F, NW SE 36-7s-2e, six miles south of the Benton field. Pipe was set to 3055 feet with drillable section opposite prospective McClosky pay at about 2900-05 feet. Some observers were dubious as to the venture's chances for commercial production.

In Marion County, Hudson-Hess' Ben Young 1, SW SW SW 7-2n-2e, wildcat a mile east of Odin, was abandoned at 3597 feet after drill-stem tests in the Devonian and Cypress. Eight feet of spotted Devonian saturation was found at 3520 feet and 20 feet of broken Cypress saturation was cored at 1745 feet. W. O. Allen's French 1, SW SW SE 19-4n-3e, another wildcat in the county, was coring Benoist sand. Austin Oil Company's wildcat, Peter Smith 1, SE SE SW 12-3n-2e, was drilling at 2363 feet in the Fredonia. It was reported upper horizons were dry.

Posey County Wildcat to Test Three Formations

Whisenant & Trenchard's Florence McFadden 1, SW NW SW 16-6s-14w, Posey County wildcat in Black Township, loomed as a prospective new pool-opener six miles northeast of production in the New Haven pool of White County, Illinois. Casing was set to test three possible pays, Cypress, Renault and Aux Vases. Starting at surface elevation of 354 feet, Glen Dean was topped at 2248 feet; broken Cypress saturation at 2483-2504 feet showed 70 feet of oil and mud in one hour; Benoist topped at 2668 feet was dry; in the Renault fair saturation was cored at 2784-88 feet; Aux Vases, topped at 2800 feet, had fair saturation to 2811 feet, bottom of the hole. Drill-stem test of Aux Vases showed 120 feet of oil and mud, and no water, in 20 minutes. Casing was set to 2800 feet, with drillable section opposite Cypress section.

In the Neiderst (College) field of Point Township, Posey County, Basin Drilling Company-R. A. Riley's Oakland City College 2, SW SW NE 16-8s-14w, was abandoned after unsuccessful test of McClosky, Aux Vases and Biehl formations. Initially, well was completed in Aux Vases at 2560-73 feet for about 10 barrels a day, then was deepened to a dry McClosky at 2700 feet, then was plugged back for unsuccessful test of the Biehl sand.

In the Bufkin area of Black Township, Posey County, Gulf Refining Company's Henry J. Wedeking 1, SE SE SE 23-6s-13w, swabbed 47 barrels of oil and no water natural in 12 hours from Cypress at 2493-2505 feet. Hole is bottomed at 2509 feet. At last reports, hole was being cleaned out following a 15-quart shot.

On pump after squeeze job was a new Cypress producer in the Bufkin field, Dirickson et al's Elze Utley 1, NW SW NE 26-6s-13w, which on last 24-hour test made 99 barrels of oil and 58 barrels of water. Hole is bottomed at 2452 feet, with Cypress pay at 2431-44 feet. One location north of this test, Gulf Refining Company's M. E. Downen 1, SW NW NE 26-6s-13w, found the Cypress dry and was abandoned at 2480 feet.

Drilling at 850 feet was a new cable-tool start in the Hatfield area of Spencer County, George Hedges' A. Eble 1, SE SE NW 7-7s-7w, north offset to Sycamore Oil Company's Prudential Life Insurance Company 1, abandoned two years ago after an unsuccessful test of McClosky.

Abandoned after unsuccessful test of Tar Springs at 1915-25 feet was R. B. Creager's J. Reis 1, SW SW NE 1-7s-12w, Sun Oil Company farmout in the Heusler Dome field of southeast Marrs Township, Posey County.

Shut down after spudding was a Gibson County wildcat in Montgomery Township, four miles south of Mt. Carmel, Illinois, Ward Wickwire et al's Davis 1, SW SW SE 8-2s-12w. A mile southeast of Mt. Carmel, W. F. Lacy located A. Juttendonk 1, NW NW SW 27-1s-12w, Gibson County wildcat in Montgomery Township.

One Wildcat Start and Three Failures in Week

In Muehlenburg County, Kentucky, W. S. Tatum spudded Adkins 1, a Sun Oil Company farmout 1½ miles southwest of Depoy.

Three wildcats were abandoned: John McKeel's Adir 1, near Farmington, Graves County, dry through St. Peter to 2772 feet; Sun Oil Company's George Wood 2, eight miles east of Litchfield, Grayson County, at 1586 feet, and W. E. Hupp's M. K. Rice 1, Section 14-Q-26, two miles north of Spotsville, Henderson County, through a dry McClosky to 2180 feet.

Oklahoma-Kansas

Wilcox 210-Barrel Well Revives Bugher Pool

W. A. Delaney, Jr. et al revived the abandoned Bugher area, Cleveland County, when Montgomery 1, SE NW NE 13-7n-2w, flowed 210 barrels in 24 hours through various tubing chokes. First Wilcox sand was topped at 7640 feet, and cored to 7650 feet. Seven-inch casing was cemented with 100 sacks at 7635 feet in Dolomite, logged at 7620 feet. This semi-wildcat is a diagonal southeast offset to the discovery well which went to water after producing around 70,000 barrels of crude. Three miles northeast of this strike, Sinclair-Prairie Oil Company et al's Craig 1, NEc SE 30-8n-1w, was below surface pipe and slated for Second Wilcox sand. Location is on a 640-acre community block.

Third productive horizon was proven for West Arno pool, Creek County, at Wilcox Oil & Gas Company's Stephney 1, NE NW SW 35-14n-7e, flowing 100 barrels of oil in 24 hours on completion test through tubing. Crude has been averaging between 41 and 44 gravity. This well checked structurally low on Second Wilcox sand at 4007-11 feet, and plugged back to 2940 feet. Red Fork sand, topped at 2900 feet, was shot with 80 quarts. Structurally, Stephney 1 was too high to make a well in the Prue sand, original pay for the area. Second Wilcox sand was proven shortly after the Prue zone when a test found both Red Fork and Prue sands too high. Two tests are actively drilling in the pool. The three discovery wells are on a northwest-southeast trend.

Skelly Oil Company and Selby Oil & Gas Company's Frensley 4, C NE NE 35-1s-5w, deep test in Velma area of Stephens County, perforated McLish with 95 shots at 7728-60 feet for no results. Acidizing also was futile. Five and one half-inch casing was then perforated at 5240-46 feet in Sylvan section, and then squeezed off with cement to protect the upper zones. Operators have yet to perforate a show at 7142-94 feet in Bromide sand, where early drill-stem test indicated a large producer.

New Hughes County Gas Area

Arrow Drilling Company et al's Granneman 1, SW NW SE 23-9n-11e, five miles southeast of West Wetumka pool, Hughes County, opened a new gas area. When both Gilcrease and Cromwell sands showed water, operators perforated with 12 holes at 2260-73 feet in Booch sand, topped at 2250 feet. Swabbing brought in a 3,000,000-foot gas well. Hole is bottomed at 3454 feet, and plug set at 2336 feet. It was shut in pending an outlet.

East Pawnee pool was defined as a one well producing spot. Alma Oil Company's Hill 2-A, SE NW SW 1-21n-5e, southeast diagonal offset, was made into a salt water disposal well at 3346 feet, with Woodford shale logged at 3335-66 feet. Same operator's Reid 1, SE SW NW 1-21n-5e, northeast diagonal offset, was completed for salt-water disposal purposes in Misener sand at 3378-3448 feet.

One wildcat was drilling in Lincoln County. Portable Drilling Company's Scott 1, NWc SE 31-17n-4e, between Sporn and Agra pools on a northwest-southeast trend, was abandoned at 3268 feet in Cleveland sand. Vanderpool et al's Menshall 1, SEc SW 11-16n-3e, two miles southwest of the above wildcat failure, was drilling below 750 feet.

Helmerich & Payne's Cryer 1, SE NE SW 33-2n-5w, a mile north of West Doyle pool, Stephens County, logged lime at 3345-85 feet, white sand 4895-4908 feet, and was drilling below 5750 feet in shale and sand.

Mid-Continent Petroleum Corporation's Felix 1, SE SW SW 11-9n-9e, a mile south of Papoose pool, Hughes County, was coring below 4250 feet in Wilcox sand. Shell Oil Company's Keyes "B" 1, SWc NE 22-11n-8e, north of Cromwell pool, Okfuskee County, found Cromwell sand slightly above 3400 feet and was coring slowly.

The Texas Company's Smith 2, C SE NW 2-5n-12w, wildcat test in Anadarkio Basin, flanking the Wichita uplift, topped Bromide sand at 3360 feet, and was coring. Upper part of Bromide showed shale, and operators were awaiting a softening break. Test was checking several hundred feet structurally higher than Smith 1, which made a gas well in Viola lime. Second test topped Sylvan at 2104 feet and Viola lime at 2340 feet, missing the Woodford shale entirely. Smith 1 encountered a fault, cutting two sections of Viola lime.

Extensions Given Couch And Toronto Pools

Tulsa Oil Corporation extended Couch pool, Cowley County, at Howard 1, SW SE NW 12-30-5e, pumping 314 barrels of oil in 24 hours. Bartlesville sand at 2830-45 feet was shot with 30 quarts.

Toronto pool, Greenwood County, was extended ¼-mile southwest at Kellor 1, SEc NW 22-26-13e, completed for 4,000,000 feet of gas in Burgess sand at 1491-98 feet.

Pryor & Lockhart et al's Mans 1, C W½ SW NE 9-16-12w, ¾ mile northwest of Beaver pool, Barton County, will either extend that pool or open a new source in Arbuckle lime around 3365 feet. A 50-barrel well was showing on initial tests.

Stanolind Oil & Gas Company plugged back to 2700 feet to test Mississippi Chat at Karber 1, C N½ SW SE 5-16-1w, eight miles north of Roxbury pool, Saline County. This trend wildcat logged Lansing at 2040 feet, Mississippi 2668 feet, Hunton 3055 feet, Viola lime 3275 feet, Simpson sand 3343 feet, and Arbuckle lime at 3433-47 feet. Five and one half-inch casing was cemented at 2670 feet. Three drill-stem tests in Mississippi previously showed mud.

Shell Oil Company's Hall 1, NEc 36-32-3e, three miles northeast of Rainbow Bend pool, Cowley County, logged Topeka lime at 1478 feet, Layton sand 2585 feet, Kansas City 2687 feet, Bartlesville zone 3144 feet, no sand, Mississippi 3257 feet, Kinderhook 3420 feet, and was drilling below 3600 feet after recovering three joints of stuck drill pipe.

Wildcat failures were recorded in Russell, Pawnee and Sedgwick counties. Central Petroleum Company and Kiowa Drilling Company received plugging orders at Waydziak 1, NWc 25-15n-12w, two miles east of Dubuque pool, Russell County. Arbuckle lime showed water. Gulf Oil Corporation abandoned Seymore 1, C N½ SW NW 34-21-18w, 11 miles west of Larned, Pawnee County, at 4183 feet in Arbuckle dolomite. C. L. Carlock et al's Whitson 1, C W½ NW SW 25-25-2e, 4 miles northeast of Greenwich pool, Sedgwick County, logged Lansing at 2130 feet, Kansas City 2392 feet, Mississippi lime 2848 feet, and plugged in Arbuckle dolomite at 3347-67 feet.

Aladdin Petroleum Corporation's Reschke 1, C W½ SW SW 18-27-13w, 4 miles southwest of Iuka pool, Pratt County, was abandoned in Arbuckle lime, topped at 4572 feet and penetrated 75 feet.

Nebraska-Iowa

North Falls City's Third Well Estimated at 300 Barrels

Third producer for North Falls City pool, Richardson County, was being put on the pump, and estimated on swab tests at 300 barrels of clean oil per day with no water. The Ohio Oil Company's Bahr 1, C SE SW 7-1n-16e, drilled to 2280 feet in Hunton lime, topped at 2274 feet. Operators staked Bahr 4, C NE SW 7-1n-16e.

One mile south of West Shubert pool, Richardson County, Midland Oil Company recorded a wildcat failure at Bebhard 1, NEc 1-2n-15e, dry in Hunton lime at 2610-28 feet.

Principal activity centered in the West Shubert area. Black Gold Operating Company's Bahr 1, C NE NE 36-3n-15e, was rotating below 1875 feet, while the operator's Watkins 1, C SE SE 30-3n-16e, two 40-acre locations east of West Shubert pool and one location west of Shubert pool proper, acidized Hunton lime with 500 gallons at 2503 feet and was installing pump.

Black Gold Operating Company was making fast time at Evans 1, C NE NE 31-3n-16e, below 2000 feet. Same company's Schaible 1, C SE NE 31-3n-16e, south offset to Evans 1, cemented 5-inch casing at 2515 feet in Hunton lime, penetrated to 2521 feet. On initial pumping test, the producer made 11 barrels the first hour and was estimated at 250 barrels daily. Watkins "B" 1, C NE NW 31-3n-16e, two locations west of the Evans test, was treating Hunton lime at 2495-2500 feet.

Echert & Powers will attempt to revive the abandoned Dawson pool, Richardson County, at Albin 1, SW NW SW 10-1n-14e, ½ mile east of the discovery.

National Petroleum Company's Oswald 1, C NW SW 15-2n-14e, five miles north of Dawson area, Ricardson County, gave up attempts to obtain commercial production in Hunton lime at 2551-2623 feet, and ran 5-inch liner before deepening. Original depth was 2912 feet.

In the Oskaloosa sector of Jefferson County, northeast Kansas, Longwell & Young et al's McLeod 3, C NE SE 5-10s-20e, filled 800 feet with oil in one hour after drilling plugs to 1643 feet in Bartlesville sand. Tankage has been erected, and further tests will be taken. Magnolia Petroleum Company's Davison 1, C SE SE 32-9s-20e, was nearing pay zone at 1500 feet.

North and West Texas

Bindel Pool Strike Enhances Ellenberger Importance

The Ellenberger dolomite assumed greater importance as an oil source in North Texas with completion of a flowing well in the Bindel pool, Cooke County, and promise of a deep producer for the 31-year-old Electra shallow field. The latter is three miles west of Electra.

The first oil strike below the Pennsylvanian series in the Electra field materialized when Magnolia Petroleum Company's Fee-H&TC 65, SWc NW H&TC Section 15, Block 13, Wilbarger County, logged saturation in the top of the Ellenberger at 2997-3007 feet. Drillstem test yielded 247 feet of high-gravity oil, 90 feet of brackish fluid and 30 feet of muddy salt water. This test was originally completed in 1924 as a 10-barrel pumper at 772-79 feet, and was deepened without difficulty. Small diameter oil string will be cemented on top of Ellenberger to try for completion. All wells in the field are strippers, and a large-scale deepening program will occur should the Ellenberger prove attractive. Previous Ellenberger failures at scattered points in the field indicate this deep pay will be spotted, and confined to areas where the Ellenberger peaks are abnormally high.

Magnolia Petroleum Company was salvaging casing and pumping units from about 200 non-profitable strippers in Electra and Burkburnett districts. This program at Electra may be curtailed in view of the pending deep strike. The company has rigged up to explore the Ellenberger in the South Electra field with its Burnett-Gladiolus 79, SW SE SW HT&B Section 6, completed May, 1924, as a pumper at 1936 feet. The latter is 1½ miles west of Strawn outpost producers for the K-M-A deep field.

The Texas Company's Fleitman 1, west offset to the 1900-foot discovery in the Bindel pool, western Cooke County, proved the Ellenberger at 3242-46 feet with a natural flow of 105 barrels of pipe-line in five hours through ½-inch tubing choke. Top of Ellenberger was placed at 3241 feet by electric formation survey, and 7-inch pipe is at 3242 feet. The well was completed in the top of the pay because of approaching lease expiration. The Texas Company and Sinclair Prairie Oil Company hold lease on all close-in acreage, and the latter has rigged up for its first test. Sinclair Refining Company serves the area with a short lateral from trunk line that serves its Fort Worth refinery.

Hults-Owens Deep Test

Deeper pay for the Hults-Owens pool, western Montague County, is in prospect from porous lime tentatively identified as the Mississippian or Simpson, and topped at 6727 feet. Drilling was halted after losing rotary returns at 7238-39 feet. Electric formation survey recorded promising oil porosity in the lower beds, with two possible producing zones above. Seven-inch pipe was cemented at 7210 feet to attempt production test. Walter Gant and Continental Oil Company, joint owners of a block centering 5½ miles northeast of Bowie, have made location for Turner 1, northeast corner of E. T. Ry. Section 59, ½-mile southeast of their Brown 1, which yielded free oil in the Bend before developing junked hole.

Gulf Oil Corporation's Scaling 1, recent deep discovery for the abandoned Strawn portion of the Worsham pool, Clay County, pumped 176 barrels oil and 153 barrels water the first 24 hours, and 121 barrels oil and 145 barrels water the second day. Production is from Bend and Ellenberger zone at 5600-5814 feet.

Two projected Mississippian lime tests have been staked by Shell Oil Company east of its 5715-60-foot discovery on the west edge of the Antelope pool, southwestern Clay County. The discovery flowed 1200 barrels oil on nine-hour open tubing gauge after acidizing through perforations, with gas volume rated at 4,000,000 feet daily. Bridwell Oil Company's Myers 2, second deep test for the company's Nebtex prospect, logged top of Simpson at 6011 feet and Ellenberger at 6074-95 feet. The Mississippian is believed to be missing, although the first test logged this marker at 5997 feet. Myers 2 showed nominal stain and odor in the Simpson and Ellenberger, and may be cased for a production test.

Shell Oil Company's Bloodworth 1-A, north offset to the 4900-foot Mississippian discovery made last April in the Larimore shallow area, northern Young County, entered the Bend at 4152 feet, being flat with the producer, and logged oil stain and odor at 4152-92 feet. It was drilling at 4450 feet. Four of seven tests authorized for the area are active.

Lewis Production Company's Bond 1, mile east of production in the Fargo 3-pay pool, Wilbarger County, was abandoned in Strawn at 4804 feet, registering a sharp dip in the structure. This is the third failure on the outskirts of production. The area will not embrace as much producing acreage as originally forecast for its Cisco, Canyon and Strawn zones. However, scores of proved locations remain undrilled, while twin wells are to follow later on a number of leases. Bell Oil & Gas Company, purchaser of the crude output, proposes to build a pipe line into the area from the Burkburnett district, and in the meantime is accepting tank-truck deliveries at its Devol refinery.

British-American Oil Producing Company's Cowan 1-C, SWc T&NO Section 75, eastern Baylor County wildcat, and 2½ miles northeast of 2500-foot Canyon production, was drilling at 5230 feet after testing dry in Bend at 5206-17 feet.

Small Well Opens New Jones County Pool

W. W. Fondren et al's Hodges 1, SW NE T&P Section 32, Block 18, opened a new pool for southwestern Jones County with initial gauge of two barrels oil and eight barrels water hourly on pump from casing perforations at 2943-48 feet. The well was carried to water sand at 3069-70, then plugged back to 2960 feet to test the sandy-lime zone that was passed up to explore the full section. It is 1¼ miles east of the original Noodle Creek pool.

R. H. Roark et al's Elliott 1-A, C SW SE L.A.L. Section 9, projected 5000-foot wildcat for Shackelford County and six miles northwest of Moran, developed 5,000,000 feet of gas with spray of water from sand at 919-20 feet. Production has been mudded off to deepen, but a twin test is due to be drilled as a ready market is available for gas to be used in repressuring shallow properties in the general area.

Leader Oil Company's Carlisle 3, ½-mile northeast of the Carlisle pool, Stonewall County, logged top of Bend at 6205 feet with elevation of 1798 feet, and was drilling at 6485 feet. A northwest offset to the discovery recorded oil show in the Bend section in drilling to the Hickory sand, Cambrian series, which carried water at 6725-28 feet.

Pipe Line Outlet to Boost Drilling in Abell Pool

Five tests on the north and east flanks of the Abell 10-well pool, northern Pecos County, failed to make commercial oil producers in the regular McKee sand member of the Simpson and were drilling to 5900-foot Sharp sand. The area is due to gain in drilling as The Texas-New Mexico Pipe Line Company authorized immediate construction of a 20-mile 6-inch line from its Crane Station, eastern Crane County, to gather and transport oil to be purchased by Sinclair Prairie Oil Marketing Company.

Magnolia Petroleum Company's Gerety 1, north outpost, was drilling at 5600 feet, with 7-inch pipe at 5240 feet, two feet above the McKee sand. This test showed 4,549,000 feet of dry sweet gas when formation test was used at 5273-84 feet. The company's Baldwin-State 2 was drilling at 5530 feet, having topped the Tulip Creek marker at 2566 feet sub-sea as compared to 2554 feet sub-sea on Gerety 1. J. F. McKee 1 produced gas and distillate in the McKee sand at 4969-75 feet, and a second drill-stem test at 4988-5000 feet yielded heavy volume of salt water. It was drilling at 5390 feet. Maglonia Petroleum Company and Stanolind Oil & Gas Company's McKee-Tex-Mex 2, offset to the northernmost producer, showed 4,000,000 feet of gas at 5265-85 feet, and was drilling at 5340 feet.

Sinclair Prairie Oil Company's Grove 1, 1⅜ miles east by north of the discovery, was drilling at 5460 feet. Seven-inch pipe was landed at 5422 feet because of trouble with gas from the upper Permian. No shows have been recorded in the Simpson, which was topped at 4820 feet with elevation of 2392 feet. Abell et al's Rixse 1 plugged back from 5043 to 4997 feet, resulting in small natural flow of oil and water. Plug has been re-set at 5001 feet to try for complete water shutoff. Magnolia Petroleum Company's Crockett 2, north offset to the discovery, scored initial rating of 1685 barrels of 45.4-gravity oil with gas/oil ratio of 814/1 on ½-inch tubing choke. Production is from McKee sand at 5297-5303 feet, with elevation of 2394 feet. Stanolind Oil & Gas Company's Conry-Davis 1, four miles southeast of production, was drilling hard Ellenberger at 5685 feet. This outpost found the Simpson cut out, and entered the dolomite at 4825 feet.

Gulf Oil Corporation's Waddell et al 23, ¼-mile southeast of the company's semi-wildcat producer on a strike between the Sand Hills and Abell areas, was coring at 5642 feet after failing to

register flowing production from broken saturation in Ellenberger section at 5552-5632 feet. The original completion earned a potential rating of 1242 barrels after acidizing saturation at 5635-48 feet in Ellenberger, topped at 5584 feet with elevation of 2463 feet.

Sam Weiner et al's Halley-Texaco 1, C NW NE PSL Section 7, Block B-11, Winkler County, promised a ¾-mile east and northeast extension for the Emperor pool, with oil and gas showing from sandy-lime at 3003-23 feet. Burst of gas lodged tools, causing a fishing job. It occupies favorable structural position, having logged top of brown lime at 2230 feet, and first Yates at 2335 feet, with elevation of 2796 feet.

Slaughter Area Has Failure

First failure for the north edge of the Hockley County portion of the Slaughter field was recorded by Magnolia Petroleum Company's Maple Wilson 2, southwest corner Labor 10, League 41, Maverick County School Lands, ⅔-mile east of an outpost pumper on the company's 2048-acre lease. The hole was abandoned at 5596 feet in anhydrite and lime, with base of the brown porous lime at 5390 feet. Wilson 1 broadened the field 1⅛ miles northeast in April, but production has dropped to 18 barrels oil and 15 barrels salt water daily. The Texas Company's Lucas 1, northeast corner PSL Section 7, Boock AX, mile west of production on the south end of this portion of the field, swabbed 70 barrels oil and acid residue in six hours after two-stage treatment with 4000 gallons of acid at 5015 feet.

Three important deep tests were active in the upper portion of the district. Amon G. Carter et al's Wasson 4-D, Gaines County portion of the Wasson field, was drilling at 10,950 feet, having made exceptionally good progress in recent weeks. Ellenberger dolomite is the objective, unless the upper Ordovician is productive. In southeastern Hale County, Humble Oil & Refining Company et al's Byrd 1 was drilling at 5090 feet. Core was pulled at 5030-36 feet, yielding dry lime with sulphur odor. Phillips Petroleum Company's University-Andrews 1, northeast outpost for the Embar gas pool, Andrews County, was drilling at 8165 feet without shows in the Lower Permian. Amerada Petroleum Corporation's University 1-RA, southeastern Reagan County projected Ellenberger test, was drilling at 6280 feet.

Magnolia Petroleum Company's Ralph 1, proposed Ordovician test for western Andrews County, was drilling at 2810 feet, having logged top of anhydrite at 1695 feet, with elevation of 3420 feet. Mascho Oil Company has three active wildcats underway in Andrews County, including a pair on University acreage farmed out due to approaching expirations by Gulf Oil Corporation and The Texas Company. Mascho Oil Company's Fischer 1, Shafter Lake prospect, was drilling at 4210 feet, having logged oil stain at 4165-76 feet. Top of San Andreas lime was called at 4083 feet. Exceptionally fast progress has been made by The Texas Company's Murphy 1, western Terry County wildcat, which spudded May 17 and was drilling at 4700 feet in San Andreas lime, topped at 4530 feet with elevation of 3548 feet. Outlying failures and geophysical information label this as a good prospect, which was originally undertaken by J. W. Murchison and associates.

East Texas

Anderson County Woodbine Well Precipitates Lease Play

An active lease play was staged by independents last week near B. T. Royalties Company and Housh & Thompson, Inc.'s Coleman 1, Southwest Anderson County Woodbine prospect, as owners prepared to perforate pipe for production test. Pipe was landed on bottom at 5507 feet. Top of Woodbine series was called at 5245 feet, with elevation of 292 feet, and broken sand pay gave promise of yielding gas-distillate production. The test is 2¾ miles northwest of H. L. Parsons and American Liberty Oil Company's wildcat gasser on the Hemby tract, John Gossett Survey, and 3¾ miles southeast of nearest gas production in the Leon County sector of the Long Lake field.

Ross Sears and A. O. Phillips' Pool 1, recent strike for southwest Rusk County, produced 8¼ barrels of 39-gravity oil with gas/oil ratio of 31,000 feet per barrel on 24-hour gauge through 1/16-inch tubing choke. Production is from casing perforations at 4054-62 feet in Woodbine, topped at 4043 feet with elevation of 412 feet. Earlier production test through ¼-inch choke rated the oil yield at 25 to 50 barrels daily, with excessive gas flow. Additional perforations are to be made so as to increase the volume of oil. Owners plan to drill one or more offsets.

Talco Asphalt & Refining Company's McKenzie-Shell 1, ¾ mile west of production in the Pittsburg two-well pool, Camp County, maintained its favorable structural position in logging top of Georgetown at 4563 feet, with elevation of 397 feet, and was drilling at 6350 feet. The producers are averaging 52 barrels oil daily each from the 8000-foot Travis Peak sandstone.

Roger Lacy et al's Horton-Dickson 1, seventh gas-distillate producer for the Willow Springs deep area, Gregg County, tested 2,000,000 feet of wet gas natural from perforations at 7132-7296 feet in Pettit, topped at 7126 feet with elevation of 268 feet. Acid will be used to boost production. Humble Oil & Refining Company and Gulf Oil Corporation's Fisher 1, northwest outpost, was awaiting drill-stem test after plugging back from 7705 to 7410 feet. It was attempting to give the area its first production in the Travis Peak, which was topped at 7427 feet with elevation of 308 feet. The Pettit was entered at 7241 feet, but has not been tested. The partnership's Robertson 1, pool discovery, drilled through the Travis Peak to Lower Marine series at 7,395-10,275 feet with negative results.

Southwest Texas

Clara Driscoll-Minnie Bock Merged Into One Field

New oil sands were being established in several Southwest Texas Gulf Coast areas. Of likely principal importance is the Clara Driscoll-Minnie Bock play in Nueces County, where a consistent drilling program has merged the entire structural trend into one field.

Windsor Oil Company's A. N. Parr 1, SW Section 37, eastermost test in the Minnie Bock field, drilled to 3915 feet and found salt water in the 3800-foot discovery sand. Side-wall samples showed a saturated sand at 3698 feet in the Catahoula. A string of 5½-inch casing was landed at 3742 feet, and after being perforated, the well flowed 41 barrels of 24.5-gravity crude and no water through 7/64-inch choke in 24 hours. With pressures of 950 pounds on tubing and 1150 pounds on casing, it showed a gas/oil ratio of 1400/1.

During recent months there has been considerable exploration at the north end of the Clara Driscoll field and the south end of the Minnie Bock pools, completions in the two areas now offsetting each other. The same applies to the South Clara Driscoll field, which also has been merged into the main Clara Driscoll pool.

Permission has been obtained by Osborn and Mid-Continent to retest Burow 1, 2-mile northeast outpost to the Agua Dulce field, Nueces County, and the well at last report was flowing at the rate of ½-barrel of distillate per hour under 6000- to 7000-foot to the barrel gas/oil ratio. Test was through ¼-inch choke with perforations in casing at 6712-14 feet. It likely will be tested at other levels.

Bay-Tex Oil Corporation and Atlantic Refining Company found either water or mud on its tests up the hole from 10,496 feet in McColloch 2, deep test on the northeast side of the McCampbell field of Aransas County. Tests have been made at 10,205-230, 10,146-56, 9978-89, 9825-30, 9595-9600 and 9618-40 feet, and new test was being run at 9420-50 feet.

A new pay or a material extension is assured for the west side of the Refugio field, Refugio County, Hewit & Dougherty's W. J. Reilly et al 1, SE block 16, tested oil and water through perforations at 6274-80 feet, apparently with a bad cement job, and new perforations were being made for completion. It is in this region that the first shallow gas wells of the Refugio field was completed.

Cox & Hamon's Laura McCall 1, northeast outpost to the Lolita field, was plugged back from 6425 feet and completed through perforations at 5952-56 feet, flowing 80 barrels of oil per day through ⅛-inch choke under 955 pounds tubing and 1425 pounds casing pressures. While the level checks closely with the discovery 5900-foot sand, it is believed that the pay is a separate lens immediately above the main sand. It showed up in several tests drilled immediately to the west.

Wellington Oil Company of Delaware drilled plugs on 5½-inch casing set at 6750 feet after drilling J. F. Welder 1-C to 7213 feet. The well had several sands above this level that gave promise of production. The test is one

mile southwest of the Odem field, and between it and the Angelita field of San Patricio County. Completion as a producer would provide an extension and a new sand for the area.

A flow of salt water with some oil resulted when perforations were made at 3152-57 feet in Cox and Hamon's Cuellar 4, Section 123, Duval County. The test was attempting to open Pettus sand production in the Hoffman field. It topped the Pettus and cored six feet of sand with oil show to 5139 feet, and casing was set after drill-stem test showed oil with some water. Perforations in the top part of the sand, however, failed to provide a commercial well.

F. W. Wiegand's J. M. Williams 1 extended the Tenney Creek field 2400 feet northeast when it found the Austin chalk crevice and showed for a flowing well. It encountered chalk at 2453 feet, and was drilled to 2714 feet, casing being set at 2260 feet. The well, in J. J. Bowman Survey, was swabbed in and headed considerable oil, then was shut in for storage.

Farther northeast and two miles from production, Wiegand Brothers drilled to 3035 feet, 17 feet into the Edwards limestone, and abandoned Epstein et al 1.

Rincon, Starr County Frio-sand field, was extended one mile southwest as production test was under way in Continental Oil Company et al's Slick Estate 51-B, Section 222. The test was shut in for storage after perforations were made at 4036-46 feet. First tests into the pits indicated a good producer. Hole was bottomed at 4613 feet with 6-inch casing set at 4546 feet.

Edwin M. Jones was drilling below 9248 feet in a projected 11,000-foot Wilcox-sand wildcat on the George West ranch in western Live Oak County. The test was making rapid progress through the high pressure sands after installing special drilling equipment. It blew out several months ago at 9039 feet, ten feet into a gas/distillate sand in the Carrizo zone, and burned, destroying the rig and equipment. The new rig was constructed over the site and work resumed. Bridges were drilled out and a portion of the Carrizo section cored, recovery including considerable sand with oil and gas show.

In Bee County, Hewit, Dougherty & Ogden's Weiss 1, four miles east of Tuleta, progressed to below 8872 feet, white Shell Oil Company's McManus 1, deep operation on the Brushy Creek prospect in Lavaca County, reamed down to 8300 feet.

Gulf States Places Hidalgo Cycling Plant in Operation

Gulf States Oil Company has placed into operation a cycling plant in the San Salvador field, Hidalgo County. The plant is handling gas and distillate from sands at 7300 and 7900 feet, being produced by dual wells. It has a capacity of 15,000,000 feet of gas and 350 barrels of condensate per day.

The gas is handled at 1800 pounds in the plant, and boosted to 3700 pounds for injection into the well. Two 600-horsepower engine-compressors power the plant. It is operated under the direction of E. J. Cole, Mercedes, production superintendent.

Texas Gulf Coast

Deep Montgomery Wildcat Reports Sands in Wilcox

David B. MacDaniel's Hattie O. Baldwin 1, deep Wilcox wildcat started last October and intermittently tested at around 9400 feet for several months, has cleaned out hole to former bottom at 9740 feet, deepened, and set string of 4-inch liner to 10,031 feet. There had been an oil string of 5½-inch casing at 9608 feet for early tests, but operators reported oil showings in sands all the way down to the present depth. A sand at 9974 feet is said to look particularly good. Decision to go ahead in this old test was made following success of Superior Oil Company in finding a producing sand at Lake Creek about 1000 feet in the Wilcox, whereas Baldwin 1 had stopped about 750 or 800 feet in the formation.

Superior Oil Company's second well at Lake Creek, ¾-mile west of the discovery, was making a drill-stem test of a sand at 8991-9007 feet. Recovery was poor, but oil odors were reported in what was found. The section above this had been found none too good, according to reports, the sands being laminated to a greater extent than in the discovery with thinner streaks, although it ran only a few feet lower structurally.

Continental Oil Company was expected to announce location for a new Wilcox test in Montgomery County, east of Willis in the area drilled last year by Dick Schwab to the Wilcox.

In Wharton County, Davis & Company's Hortman 1 was completed as a dry gasser through perforations at 3400-3411 feet, and may be used to furnish fuel for further drilling on the prospect. The sand from which the gas comes definitely carried some crude oil in the bottom.

Cockburn Oil Corporation will try for production in the Cook Mountain sands in Leveridge 1, location for which was made last week in the Frazier & McCormick Survey, in the extreme northwestern portion of Fort Bend County, and northeast of the East Bernard field, which produces gas and distillate from the Cook Mountain.

British American Oil Company et al were delayed in starting State 1-C-70, at Sabine Pass, by rough water which retarded progress in setting up the rig. Bottom of the hole will be deflected so as to strike the sand at a point 800 feet northwest of the discovery, although the rig will be located on the same platform. Humble Oil & Refining Company and Magnolia Petroleum Company abandoned Baird 1, several miles northwest of the Sabine Pass producer, at 8015 feet after failure to find showings. A new location was made nine miles west of the Sabine Pass field, and three miles west of the Clam Lake field by Humble Oil & Refining Company and Shell Oil Company, Gallier 1, a 11,000-foot test on the Star Lake prospect.

Louisiana Gulf Coast

Wildcat Activity Increasing With Four New Tests Staked

Four wildcat tests have been staked, all to be drilled to interesting depths, indicating an upward swing in wildcat activity.

On the northeast east flank of the Chacahoula dome in La Fourche Parish, where recently Texas Gulf Producing Company abandoned a 6263-foot dry hole, Oliphant Oil Corporation was moving in derrick and materials for Frost 1, 66-15s-15e, three miles south of Thibodeaux and 3500 feet north of the dry hole. Projected depth is 10,000 feet. Parker Drilling Company has the contract.

J. A. Hafner, Jr., assembled a block of about 3000 acres in the Southwest Opelousas area in St. Landry Parish, and has staked location for Hidalgo 1, section 26-6s-3e. Companies supporting the test are Sun Oil Company, Amerada Petroleum Corporation, Tide Water Associated Oil Company, Stanolind Oil & Gas Company, William Helis and W. T. Burton. It will be drilled to 8500 feet to test the Tepetate section.

In Allen Parish, where W. T. Burton was rigging up Calcasieu National Bank 1, Frank K. Campbell staked a 7750-foot wildcat 2 miles east of the Beauregard-Allen Parish line. Location is SE 14-3s-6w. A company rig will drill the well. Supporting the test are Sinclair-Prairie Oil & Gas Company, Republic Production Company, Pan American Production Company, Kirby Petroleum Company, The Texas Company and Moran Corporation. Humble Oil & Refining Company drilled a 8094-foot dry hole 3 miles southeast of the location.

On the Moss Lake prospect, Calcasieu Parish, Pan American Production Company started clearing location after building road to Louisiana Farm & Minerals 1. Location is in the southwest corner of Section 8-11s-9w. Shell Oil Company farmed out the acreage.

Cockburn, Hargrove & Bateman's Wilcox test at Lake Latainer, Avoyelles Parish, expected to open a new pool, was standing cemented with 5½-inch casing landed at 6774 feet. Perforations will be made after drilling plugs. Side-wall samples of sand at 6668-6710 feet showed over 4 percent saturation by volume.

Harbor Oil Company's wildcat test 2300 feet northeast of Humble Oil & Refining Company's Bayou Sale test in St. Mary Parish, was drilling in surface sands and clay at 2000 feet after spudding early in the week. Humble Oil & Refining Company's test, Marin et al 1, was conditioning mud at 11,997 feet in shale. No shows have been reported, but mud conditioning may indicate gas pressure.

The California Company had casing set to test a new and shallower sand in the Barataria field, Jefferson Parish. Fleming Plantation C-7 topped sand showing oil at 7620 feet, and landed casing at total depth of 7655 feet. Fleming Plantation 7, deep test, tested a little high-gravity oil and salt water through perforations at 10,051-053 feet.

North Louisiana

New Test Staked in Natchitoches Parish Area

J. E. Watts, who several weeks ago completed the first commercial well for the Ajax area of Natchitoches Parish, a small well variously estimated at 5 to 20 barrels of oil daily, last week located a second test in the same section. Tanner 2 is in NE SW NW 18-10n-10w. The discovery well was completed from the 3200-foot level, and two locations besides the new one have been made since the first well was completed. Several tests drilled before the discovery showed the oil sand closely overlaid a salt water sand, and it is believed that drilling through the oil stratum into the water level can be avoided.

North Louisiana's deepest test at present, Big West Drilling Company's Patton Estate 1, E½ W½ SE 7-20n-4w, on the southeast side of the Lisbon field, Lincoln Parish, ran electric log to total depth of 9147 feet for a study of lower Marine (Cotton Valley) strata. This test showed salt water in a lower Marine sand at 8571 feet, and another at 9083 feet showed only a little gas. Two wells at Lisbon, but more than two miles northwest of this test, have produced gas-distillate in the lower Marine. Northeast 2½ miles of Lisbon's regular basal Glen Rose lime oil producing area, Union Producing Company several weeks ago found the first Smackover lime gas-distillate production in North Louisiana at 10,397 feet.

H. L. Hunt, who discovered the Olla field, LaSalle Parish, on Louisiana Central Lumber Company fee, and has large tracts of this company's acreage under lease, was negotiating with the same company for 56,000 acres in Township 9 north, Ranges 5 and 6 east, Catahoula Parish. Southeast of Jena, LaSalle Parish, The Texas Company was leasing in Township 8 north, Range 4 east, and Shell Oil Company was leasing in Township 8 north, Range 3 east in the same parish.

Sells Petroleum Company abandoned a wildcat test, Feazel 1, C N½ 26-13n-3w, Winn Parish, after reaching contract depth of 4500 feet. This test had several good showings in the Wilcox between 1800 and 2500 feet. The test topped Wilcox at 1072 feet.

The Carter Oil Company abandoned at 5103 feet Farley 1, NE SW 10-20n-1w, Union Parish wildcat on the west side of the Monroe fault. Electric log was run.

Arkansas

McKamie Field Test Cores 115 Feet of Good Sand

Indicative of the huge gas-distillate reserve in the McKamie field, LaFayette County, Arkansas' deepest field, was the fact that The Carter Oil Company's Cornelius 1, SE SE 30-17-23, ⅝-mile west of production, logged 115 feet of excellent porosity from 9112-9227 feet, after topping first porosity at 9041 feet, with elevation of 288 feet.

Six-inch casing was cemented at 9275 feet, total depth being 9280 feet. Revised electric log points in this test show top of Buckner at 8908 feet, top of the Smackover at 9025 feet, and top of Reynolds lime at 9034 feet. This company staked another location at McKamie last week.

Crescent Drilling Company's W. A. Burns 1, NE SW 13-18-17, Union County, three miles east of the Schuler field, which tested salt water in the Smackover lime at 7607 feet, plugged back and set 5½-inch casing at 6265 feet. Casing was perforated at 6186-92 feet and showed salt water. Operators late in the week perforated at 5604-8 feet and tested salt water and a show of gas. The best showing in this test was in the Travis Peak at 5533-48 feet. Thursday a test was made at 5532-37 feet that showed 2,000,000 feet of gas and some oil.

Tide Water Associated Oil Company's Hutcheson 2, SE SW 16-18-19, was flowing into pits ungauged, apparently the eighteenth well for the Atlanta field, Columbia County. It is a west edge test; 5½-inch casing was cemented on bottom at 8231 feet.

One new location was made in the Dorcheat field, Columbia County, McAlester Fuel Company's Hunt 1, C SW SW 11-18-22. Four other tests were drilling in that field. The same company's Franks 1, C SE SE 16-18-21, Columbia County wildcat which showed for an oil producer in the lower Marine (Cotton Valley) at 6910-20 feet, was drilling below 8320 feet for the Smackover lime.

Northwest of McNab in Hempstead County, Tyson et al have taken a block around Section 16-12s-27w, Hempstead County. H. D. Easton et al drilled several tests in this general area several years ago which had showings of oil. In Union County, north of Lawson, Lockhart et al have taken acreage around Section 30-17-13 for a 3500-foot test to spud by August 5.

Mississippi

Twelve New Locations Announced at Tinsley Dome

Following closely on the granting of drilling permits for 12 tests on less than 40-acre tracts, the previous space rule in the field, 12 additional locations were announced last week in the Tinsley Dome field, Yazoo County. The new locations came despite the fact that only about 300 acres additional to the 6700 acres already proved is believed to be potentially productive in this field, and this in the southern part of the area.

The Mississippi Oil & Gas Board last week dismissed a protest of Union Producing Company against waiving the 40-acre space rule for H. F. Broocks on a location in Section 19-10n-2w. Company officials informed the board that it had offered to unitize with Brocks, but that he asked for a cash payment in addition to a pro-rata share of production.

Another application for permit to drill on less than 40 acres filed by Frankel Brothers was withdrawn, pending efforts to unitize with Mid-States Oil Corporation and G. L. Reasor on a tract in Section 6-9n-2w.

Milestone Of Progress

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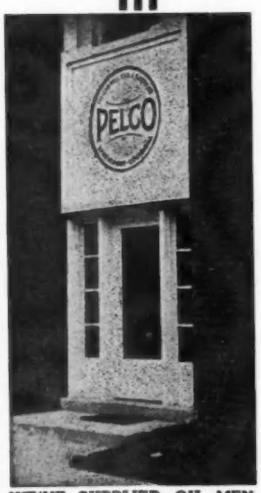

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Michigan

Bateson Deep Test Drilling Below 7960 Feet in Salt

Gulf Refining Company's Bateson 1, Section 2-14n-4e, Bay County, following a 10-day shutdown to condition mud and regain lost circulation, resumed drilling at 7789 feet, and was drilling in salt at 7961 feet. The nearly 200 feet of new hole carried little if any gas, and it was drilling comparatively well with 130 feet made the last 24 hours. The company hopes to clear the Salina salt section, entered at 5480 feet, before running 7-inch casing. Periodic shutdowns of two to eight hours are still necessary to strip gas and recondition mud, which is being maintained from 17 to 18 pounds to carry gas formations between 7380 and 7790 feet.

Bay County may take a leading place in drilling operations for Michigan this summer, not for potential deep production, but for 1500- to 2800-foot Berea and Dundee production. Gulf Refining Company recently farmed out several blocks of leases, including rights only through the Dundee, and operations have jumped to seven, with more likely. Initial production to date has ranged from 50 to 150 barrels a day, with recoveries of not more than 1500 to 2000 barrels per acre anticipated.

Don Rayburn was preparing to acidize Fox 1, Section 21-19n-3e, Arenac County, after establishing an average natural production of 10 barrels per day. Fox 1 is the first test in the Adams field to show possible commercial production below the 2900-foot Dundee horizon. The test was producing from Monroe lime at 4300 feet.

The Pure Oil announced intentions to carry Gingrich 1, SE SE SW 30-18n-10w, Osceola County, into the Monroe after testing a probable 20- to 30-barrel pay in the Dundee at 3629-93 feet.

California

Oak Canyon Deep Project To Test at 7100 Feet

Western Gulf Oil Company has bottomed Lechler 2, deep test in the Oak Canyon area of Los Angeles County, Castaic district, at 7102 feet, and was preparing to make formation test. Gas and sand showings were encountered from 7070 feet to bottom. Well was cored almost continuously from 6435 feet. At 6734 feet a drilling break was noted and showings appeared in the ditch, shale being picked up again at 6749 feet which continued with streaks of gray sand to 6805 feet. Oil sand measure topped at 6439 feet was tight near its top, but increased in permeability with penetration. Formation test at 6485-6569 feet recovered 12 barrels of 22-gravity oil, and one barrel of water.

After entering barren Eocene sand at 6396 feet, Shell Oil Company's Properties, Inc., 8-18, wildcat in the Raisin City area of Fresno County, Section 18-15-18, was plugged back to 4950 feet for a test of upper showings. Formation test at 5175-5240 feet showed wet.

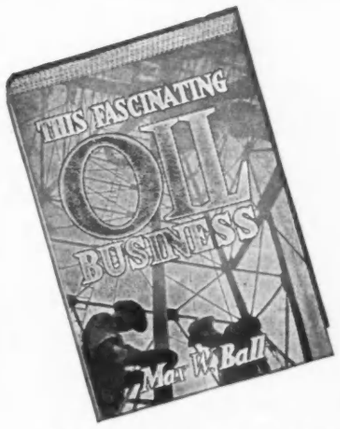
Rocky Mountain Area

Tensleep Sand Test to Be Drilled in Bison Basin Area

Frank Kistler, Denver, former president of the old Producers & Refiners Corporation, acquired acreage covering the Bison Basin structure, Fremont County, central Wyoming, from Beaver Divide Oil Company, Riverton, Wyoming. It includes some 2000 acres of government leases, the larger part of which were validated several years ago in completion of several gas wells and one oil well in the comparatively shallow Frontier sands at 1000 to 1100 feet. Kistler and associates plan a test to the Tensleep sand, to start on or before July 1.

Contract is reported let, but location not announced, to Manning & Martin, Inc., Denver, to drill Superior Oil Company's deep test to the Tensleep sand on the Bunker Hill structure, immediately north of the Wertz field, Carbon County, Wyoming. Superior Oil Company holds the operating rights to the deep sands in the field, while The Ohio Oil Company has operating rights to the Frontier.

Extension ½-mile south and west of the East Allen Lake gas field, Carbon County, was indicated by Medicine Bow Oil Company's Richards 1, CSE NE 18-22n-78w, which showed 10,000,000 feet daily on drill-stem seated at 2210 feet on top of the Sundance sand. Total depth is 2385 feet, hole went out of Sundance into the Red Beds at 2372 feet.



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UNITED STATES WELL COMPLETIONS

Company, Well and Location — Init. Prod. Bbls. — Depth

Alabama

Madison County (Wildcat)—
W. W. Newmann, Tr., Nichols 4, 2-6s-2e ..... * 305

Arkansas

Union County (Urbana)—
Marine Oil Co., Thompson E-7, 10-18-13 ..... 70 3004

California

Fresno County (Coalinga-Northeast)—
Pacific Western, E. Coal. Comm. 3 ..... 1000 8204
Standard, No. 66-19B 1692 8245
Kern County (Edison)—
Kenneth Oil Prod. Co., Bea-Eddye 2 ..... 125 3688
Kern County (Greeley)—
General Pet., Oughton 4 ..... 1150 11,500
Standard, KCL 11-25 ..... 2060 11,709
Kern County (McKittrick)—
Franco-Western Oil Co., No. 21 ..... 180 2225
Kern County (Midway-Sunset)—
Tide Water, No. American 5 ..... 14 1200
Kern County (Rio Bravo)—
Union, Pac. States 32-33 ..... 1263 11,487
Los Angeles County (Aliso Canyon)—
Tide Water, Porter 33 (pb 5400) .. 136 5491
Los Angeles County (Inglewood)—
Standard, LAI 1-85 ..... 161 3150
Los Angeles County (Wilmington)—
Coast Line Oil Co., No. 4 ..... 140 3720
Geo. F. Getty, Inc., W-3 ..... 150 5690
Hancock Oil Co., Harbor G-1 ..... 1042 3996
Union Pacific, UP 179 ..... 1426 3420
UP 182 ..... 1561 2808
UP 183 ..... 47 3585
UP 189 ..... 32 3632
Los Angeles County (Dominguez)—
Union, Austin 9 ..... 1210 7218
Callender 83 ..... 37 7628
Los Angeles County (Wilmington Torrance)—
Silver Pet. Co., No. 2 ..... 98 3667
Orange County (Brea-Olinda)—
Fullerton Oil Co., No. 9 ..... 167 4000
Orange County (Huntington Beach)—
J. E. F. Oil Co., Schaaf 2 ..... No Est. 4287
Signal O. & G. Co., Signal-Bolsa 11-B 600 2530
Santa Barbara County (Capitan)—
Shell, Covarrubias 1-30 ..... 1037 1480
Ventura County (San Miguelito)—
General Pet., Padre 5 ..... 100 5189
Ventura County (Ventura Avenue)—
Shell, Edison 34 ..... 350 8730

Colorado

Moffatt County (East Hiawatha)—
Mountain Fuel, Wilson 7, ne sw nw 23-12n-100w 290 2563

Illinois

Clay County—
Pure, Holman 3, w½ se nw 15-2n-8e 45 3070
Clinton County—
Niehoff, Fehrmann 1, nw nw nw ne 23-1n-4w ..... * 1090
Wilson, Lippert 1, ne ne ne 27-2n-1w ..... * 1405
Adams O&G, Copple 30, sw se sw 35-2n-1w 42 1368
Crawford County—
Cullin, Kirtland 1, c ne nw 7-6n-13w ..... * 3110
Effingham County—
A. J. Hammer, Rose 2, ne ne nw 22-6n-5e ..... * 2584
Carter, Tipsword et al 1, nw sw nw 18-8n-4e 79 1511
Fayette County—
Carter, Zetche 1, nw ne se 28-8n-3e 612 1591
Musser 2, nw sw sw 2-8n-3e 600 1587
Blalock et al, Harding 3, se se nw 18-7n-3e 40 1572
Franklin County—
Adkins, Rice 3, ne se nw 25-6s-2e 420 2137
Rice 4, se se nw 25-6s-2e 400 2143
Shell, McKemie 1, nw se ne 25-6s-2e 240 2160
Doey 7, sw sw ne 25-6s-2e 328 2154
C. W. & F. Coal 5, s½ se ne sw 24-6s-2e 200 2124
Wegener, Gentry 2, sw nw sw 24-6s-2e 400 2091
Gallatin County—
Egy. Tie & Timber, Curry 2, nw sw nw 15-8s-10e 200 2075
Buell & Herndon, Egy. T. & T. 2, ne ne nw se 16-8s-10e 120 2076
Phillips, Egy. T. & T. 1, sw sw se ne 16-8s-10e 82 2083
Arrow Dr. Co., Hancock Life 1, nw ne sw 4-9s-9e ..... * 2375
Hamilton County—
Sinclair-Wyoming, Hall 2, sw sw se 27-3s-5e 621 3295
Ohio, Matheny 10, nw nw ne 10-6s-6e 92 2069
Adkins, Fed. Chem. & Coke Co. 2, ne ne se 17-7s-6e ..... * 3345
Jasper County—
Pure, King 1, e½ nw se 5-5n-10e 232 2810
King 2, w½ se se 5-5n-10e 1182 2805
Canny 2, w½ se se 17-5n-10e .. 161 2815
Marion County—
Schonenfelt et al, Hedspeth 3, ne ne se se 27-4n-1e 56 1364
Shell, Headley 2, ne ne nw ne 34-4n-1e 139 1366
Randolph County—
Lachtrup, Schulze 3, sw se nw 2-7s-6w ..... * 950
Richland County—
Pure, Nicholas 1, w½ ne nw 29-5n-10e 362 2860
McCormack 1, e½ ne ne 30-5n-10e 120 2855
St. Clair County—
G. A. Morris, Rasp 1, e½ nw nw sw 32-2n-7w ..... * 960
Wabash County—
Harris & Meyers, Enham 2, se sw se 17-1s-12w 40 1561
Shell, Abell 1, sw nw sw 17-1s-12w 158 2049
Mt. Carmel Comm. 3, sw ne sw ne 18-1s-12w 54 2094
Continental, Dague 3, sw ne nw 20-2s-13w 140 2488
Joe Young, Stillwell 10, ne nw se 1-1n-12w 12 2018
Ind.-Ill.-Kentucky, Price Estate 1, ne se se 23-1n-12w ..... * 2292
Geary Oil Co., McClain 1, sw se ne 36-2n-12w 45 1963
Washington County—
Ruwaldt, Rudolph 1, se sw sw 17-3s-1w 64 1382
Wayne County—
New Penn Dev., French 3, se se ne ne 19-3s-8e 125 3265
Pure, Harrington 1, c e½ sw sw 1-1n-7e 223 2663
Michels 1, w½ sw nw 25-2n-7e .. 14 3065
Sanders et al, Hobble 3, c e½ nw se 30-2n-8e 900 3073
White County—
French & Lavender, Hon. 3, ne nw sw 33-3s-14w 105 2825
Buell & Herndon, Garrison Hrs. 1, ne ne nw 8-4s-14w 350 2861
Lambert, Calvin 8, ne ne sw 9-4s-14w 30 2858
Bell Bros., Skiles 7, nw ne sw 16-4s-14w 60 2935
Paul Miller, Ford Hrs. 2, sw sw sw 16-4s-14w 85 2603
Carroll, Boultinghouse 1, ne se se ne 17-4s-14w 248 2863
Superior, Ford 9, nw ne se 28-4s-14w 210 2920
Ford 6, nw nw nw 34-4s-14w ... 200 2735
Sun, Henning 3, sw sw nw 33-4s-14w 75 2732
Greathouse 26, se ne sw 33-4s-14w 150 2734
J. T. Bradley et al, Finch 1, se ne ne 7-5s-14w 48 2918
Ryan Oil et al, Pomeroy 1, ne ne se 4-6s-10e ..... * 3207
Cherry & Kidd, Karch 1, sw nw ne 24-6s-10e 316 2872

OLD WELLS DEEPENED

Fayette County—
Carter, Hackert 4, sw ne sw 20-7n-3e (otd 1551) 62 1574
Feezel 7, ne sw nw 29-7n-3e (otd 1552) 48 1572

[Continued on next page]

*Failures; †Junked; ¶Million cu. ft. gas.

Summary of Drilling Operations in the United States, Week Ended May 31, 1941

	WELLS COMPLETED								*PERMITS FOR NEW WELLS				
		New Wells Drilled for Oil and Gas											
	Total for Week	Oil Wells	Gas Wells	Failures	†Miscellaneous	Initial Production	Total 1941	Total this Date 1940	This Week	Total this Month	Total 1941	Total this Date 1940	Year Total 1940
Alabama	1	....	....	1	....	....	1	....	....	....	....	....	....
Arkansas	1	1	....	....	....	70	65	83	4	15	69	60	153
California	26	26	....	....	....	16,078	461	489	37	99	427	481	1,042
Colorado	1	1	....	....	....	290	7	3	....	....	....	....	....
Illinois	67	47	....	10	10	11,138	1,301	1,525	110	404	1,758	1,771	4,532
Indiana	16	7	1	7	1	568	213	163	....	....	....	....	....
Iowa	1	....	....	1	....	....	2	....	....	....	....	....	....
Kansas	49	31	1	14	3	42,727	861	743	55	204	855	857	2,048
Kentucky	6	2	....	4	....	20	121	109	....	....	....	....	....
Louisiana	43	28	3	12	....	5,659	571	679	46	157	686	708	1,658
Michigan	18	6	....	12	....	1,424	395	542	18	66	333	501	1,093
Mississippi	6	2	....	4	....	1,155	72	79	....	....	....	....	....
*Missouri	1	....	....	1	....	....	6	5	1	2	7	....	26
Montana	7	6	1	....	....	1,208	73	67	....	....	....	....	....
*Nebraska	....	....	....	....	....	....	....	....	3	9	34	....	69
New Mexico	7	5	1	1	....	1,886	147	324	7	30	161	308	559
New York	16	11	....	....	5	72	297	460	....	....	....	....	....
Ohio	40	7	15	18	....	73	654	348	....	....	....	....	....
Oklahoma	48	23	4	11	10	9,581	842	935	44	171	811	838	1,888
Pennsylvania	51	33	6	4	8	34	947	1,641	....	....	....	....	....
South Dakota	....	....	....	....	....	....	....	1	....	....	....	....	....
Tennessee	....	....	....	....	....	....	....	8	....	....	....	....	....
Texas	210	147	4	58	1	85,022	3,933	4,468	130	803	4,456	5,443	11,170
Utah	....	....	....	....	....	....	....	1	....	....	....	....	....
West Virginia	13	2	9	2	....	25	282	237	....	....	....	281	782
Wyoming	1	1	....	....	....	150	40	64	....	....	....	1	1
Total this week	629	386	45	160	38	177,180	11,267	12,974	455	1,960	9,597	11,249	25,021
Total last week	497	311	37	113	36	174,324	10,701	12,317	636	1,505	9,142	10,543	25,021
¶Total this year	11,267	7,164	946	2,595	562	3,365,275	.....	.....	....	.....	....	.....	.....

* This tabulation includes those states where weekly data are available; figures for Missouri date from August 10, 1940; Nebraska from August 3, 1940.
† Includes old wells deepened, water-intake, gas input, and salt water disposal wells.

United States Well Completions—*Continued*

Company, Well and Location	Init. Prod. Bbls.	Depth
Wellman 3, ne ne nw 14-8n-3e (otd 1449)	14	1565
Wright 10, ne sw ne 21-8n-3e (otd 1586)	24	1614
Texas Co., Philbrook 4, n½ ne se 31-7n-3e (otd 1555)	50	1574
White County—		
Pure, Potter 3, sw sw nw 9-4s-14w (otd 2700)	124	2830
Magnolia, Bond 1, se nw se 8-4s-14w (otd 2714)	123	2835
Bond 2, ne nw se 8-4s-14w (otd 2719)	163	2828
Bond 6, nw nw se 8-4s-14w (otd 2725)	100	2827
SALT WATER DISPOSAL WELL		
Fayette County—		
Carter, Huffman 1-7, nec sw sw 1-8n-3e	...	1659

Indiana

Daviess County—		
J. W. Cannon, Evans 7, s½ se se ne 8-2n-5w	20	624
Decatur County—		
Hoosier Pub. Util., Verrcamp 223, ne se 15-9n-9e	¶196.9	913
Gibson County—		
Continental Oil, Bozeman Land 33, ne ne se 23-3s-14w	35	2884
Bozeman Land 35, ne se sw 23-3s-14w	138	2848
Tide Water, Doll 7, se sw sw se 33-3s-14w	200	2800
Arrow et al, Pocket Realty 1, e½ se se sw 35-3s-14w	*	3024
Pocket Realty 5, se se sw 35-3s-14w	*	230
Huntington County—		
Geo. Beauchamp, Mayer Drain Co. 1, nw se nw sw 22-29n-8e	*	1219
Posey County—		
Bauman Dr., Ritter 1, sw sw se 9-8s-14w	*	2698
Gulf, Juncker 1, sw sw sw 13-6s-13w	*	2531
T. B. Dirickson, Slygh 1, se nw nw 23-6s-13w	*	2940
R. B. Creager, Wellburn 1, nw se ne 1-7s-6w	125	1728
Spencer County—		
Texas Co., Scamahorn 1, sw ne nw 29-7s-6w	25	922
St. Joseph County—		
John McLean, Worden 1, ne nw ne 20-38n-4e	*	643
Vanderburgh County—		
T. R. Drake, Nurrenbern 1, sw nw nw 5-7s-11w	25	1159
OLD WELL DEEPENED		
Dubois County—		
J. C. Howes et al, Beckman 1, sw se se se 15-3s-3w (otd 1175)	*	1900

Iowa

Taylor County—		
Pryor & Lockhart et al, Marr Estate 1, c e½ ne sw 32-68n-33w	*	2896

Kansas

Barton County—		
Blair et al, Peirano 1, c n½ nc ne 4-16-11w	500	3020
Shell, Bitter "C" 3, nec sw 5-16-13w	3000	3368
A. G. Kaiser et al, Templing 2, c e½ ne se 11-16-14w	400	3354
Darby, Burmeister 5, c w½ se se 3-17-11w	1154	3315
Magnolia, Grosshardt 1, c n½ nw sw 9-17-11w	45	3300
Carter & Phillips, Kraft 8, c w½ se ne 10-17-11w	550	3301
Helmerich & Payne et al, Reid 1, c e½ ne ne 10-17-14w	*	3504
S. & S. Dr. Co., Ernsting 2, c w½ nw nw 6-20-11w	*	2415
Fred Steckel, Fee 1, c s½ sw ne 11-20-12w	*	3381
R. W. Rine Dr. Co., Hart 1, c w½ nw nw 9-20-13w	*	3526
Butler County—		
Plymate, Maher 1, nwc se 22-28-4e	15	2080
Bush 1, c w½ nw nw 21-29-4e	*	2833
Coffey County—		
Aikman & Braden, Povenmire "B" 2, c nw nw 14-22-13e	15	1847
Ellis County—		
Dickey, Henderson "A" 5, c w½ se ne 7-11-17w	3000	3414
Carmichael "C" 3, c s½ se nw 17-11-17w	3000	3370
Cities Service, McCord "A" 9, nw ne se 26-11-17w	3000	3612
Ellsworth County—		
Hollow, Janzen 2, c n½ sw se 18-17-9w	375	3259
Gulf, Schroeder 5, nw se sw 20-17-9w	*	3250
Dedrickson et al, Siemsen 1, nec nw 2-17-10w	1343	3303
Wakefield et al, Mathews 1, c s½ ne se 19-17-10w	*	3315
Greenwood County—		
Sinclair-Prairie, Teeters 10, c nw ne 21-23-9e	20	2587
Leavenworth County—		
McLaughlin et al, Steenstry 2, c sw nw 3-10-20e	¶16.78	1391
Marion County—		
Sunflower Oil Co., Meyers 1, c s½ sw nw 26-17-4e	373	2393
McPherson County—		
Stelbar, Bethany College 2, c w½ nw se 19-17-1w	973	2695
Westgate-Greenland, Reese 3, c e½ sw nw 19-17-1w	1048	2703
Prunty, Jones "B" 3, sw se ne nw 31-21-1w	252	3289
Pawnee County—		
Hall-Jordan et al, Belt "B" 1, c s½ ne nw 13-20-16w	3000	3840
Rice County—		
R. Olson Oil Co. et al, Cox 2, c s½ ne ne 9-20-9w	496	3227
Rooks County—		
Cities Service, Reese 1, c s½ se se 3-9-16w (pb 3174)	324	3466
Kerlyn & Phillips, Frances 1, c w½ nw se 31-9-17w	*	3630
Russell County—		
Central, Machin 1, c e½ ne nw 9-13-14w	*	3285
Skelly, Colliver 11, c s½ se sw 28-14-13w	3000	2965
Ehrlich 5, c n½ ne sw 32-14-13w	215	2958
Texas, Kaufman 1, c n½ nw nw 9-15-12w	890	3275
Coralena, Bitter 3, c s½ nw nw 16-15-13w	3000	3136
Sellens 2-A, c n½ n½ nw 17-15-13w (pb 2967)	1770	3009
Continental, Meharg 7, ewl sw ne nw 17-15-13w	3000	3323
Sedgwick County—		
Aylward, Aylward 1, c e½ se sw 35-27-2e	*	3324
Stafford County—		
Stanolind, Krug 3, c e½ se sw 2-22-12w	*	3746
Hill "B" 1, c n½ ne nw 11-23-12w	*	3707
Charles 4, c n½ sw se 15-24-12w	1098	3964
Zenhyr, Shotton 1, c w½ nw se 28-22-13w	*	3900
British American, Meyers 4, nw se ne 28-23-12w	3000	3838
J. E. Crosbie et al, Buckle 1, c n½ ne ne 16-24-11w (pb 3828½)	240	3831
Cities Service, Benton 4, c n½ nw sw 23-24-13w	3000	4110
Trego County—		
McKnab et al, Krysi 1, c n½ nw ne 1-12-22w	*	4070
OLD WELLS DEEPENED		
Barton County—		
Murfin, Lanterman "C" 1, swc se 15-19-11w (otd 3115)	631	3154
Rice County—		
Cities Service, Rolfs 1, c e½ ne se 26-18-10w (otd 3262)	*	3265
SALT WATER DISPOSAL WELL		
Greenwood County—		
Selby, Wingrave 1, sec sw 16-28-11e	...	1172

Kentucky

Butler County—		
Cumberland Pet., Brown Hrs. 6	10	414
Hancock County—		
W. E. Hupp, Bolling 2	*	858
McCracken County—		
Dixie Dev., McFadden 1	*	300
McLean County—		
Sam Malis et al, Hall 2	*	1561
Ohio County—		
Geo. Williams et al, Dodson 1	10	529
Andy Teller, Medcalf	*	690

North Louisiana

Claiborne Parish (Wildcat)—		
H. A. Wright, Rainach 1, 16-22n-5w	*	5510
Claiborne Parish (Homer)—		
Maritzky & Bibby, Shaw 24-21n-8w	30	1443
Bossier Parish (Sligo)—		
Triangle Dr. Co., Skannal A-2, 13-17n-12w	85	3140
Murff 1, 18-17n-11w	85	3142
Caddo Parish (Pine Island)—		
Hugh Carney, Arkansas Fuel 1, 1-20n-16w	10	1540
C. C. Crews, Stiles 11, 33-21n-16w	35	1858
S. Reele, Lavine 1, 12-20n-16w	25	1554
La Salle Parish (Nebo-Jena)—		
M. J. Houston, Gross 1, 19-8n-3e	*	1637
H. L. Hunt, Goodpine A-20, 18-7n-3e	*	4018
La Salle Parish (Olla)—		
Arkansas Fuel, Tremont C-12, 3-9n-2e	90	2125
Tremont C-13, 3-9n-2e	225	2422
Placid Oil Co., Taliaferro 1, 26-10n-2e	†	1830
La Salle Parish (Summerville)—		
Placid Oil Co., Tremont 4, 26-9n-2e	95	2791
Union Parish (Monroe)—		
Noe & Woods, Pinckard 1, 33-21n-3e	¶1	2175
Union Parish (Wildcat)—		
Carter, Farley 1, 16-20n-1w	*	5103
Winn Parish (Wildcat)—		
Sells Pet. Co., Feazel 1, 26-13n-3w	*	4510

South Louisiana

Acadia Parish (Jennings)—		
Shell, Conover 15	731	8602
Ascension Parish (Darrow Dome)—		
Humble, Community 38	113	4926
Calcasieu Parish (Gillis)—		
Union Sulphur, State 20	172	7100
Cameron Parish (Chalkley)—		
Humble, Hanszen 13	*	8761
Shell, Coastal Club 2	¶1.79 & 21	10,180
Evangeline Parish (Ville Platte)—		
Continental, Ludeau-Tate 31	263	10,087
Geo. Lilly, Ortego 1	280	10,173
Iberville Parish (Bayou Blue)—		
Superior, Schwing L&S Co. 11	162	6283
Iberville Parish (St. Gabriel)—		
Echols, Louisiana Farm Prison 1	*	9616
Jefferson Parish (Barataria)—		
California Co., Unit A-14	284	8235
Jefferson Davis Parish (Welsh)—		
Union Sulphur, Gray 1	210	6917
La Fourche Parish (Chacahoula)—		
Sun, Dibert-Stark-Brown A-2	*	1283
La Fourche Parish (Golden Meadow)—		
Bering Oil Co., Curale 4	194	5165
Brown-Wood Oil Corp., Dautin 2	156	5220
Texas Co., LL&E 20	239	8050
Plaquemines Parish (Delacroix Island)—		
Texas Co., State 1	¶3.5	11,165
Plaquemines Parish (Quarantine Bay)—		
Gulf, Orleans Levee Board A-7	373	8580
Rapides Parish (Cheneyville)—		
Richardson, Weil 17	130	5998
St. Charles Parish (Lake Salvador)—		
Texas Co., State 7	515	10,296
St. Martin Parish (Anse La Butte)—		
Davis & Co., Voorhies 2	535	9449
Pharis, Akers 1	*	6118
Stanolind, Martin C-2	216	4775
Terrebonne Parish (Wildcat)—		
Bering Oil Co., Land 1	*	10,522
Vermilion Parish (Abbeville)—		
Continental, Liberty Farms 1	*	10,840
Vermilion Parish (Erath)—		
Phillips, Dugas 1	288	11,744
Texas Co., Broussard 1	97	11,624

Michigan

Allegan County—		
M. B. Keeler, Lull 1, ne se sw 36-1n-16w	*	1165
C. W. Cook, Boers 1, se sw nw 6-4n-14w	*	1557
H. C. Nelson, Peters 6, nw ne se 8-4n-14w	*	1499
L. C. Sleep, Bridgeman 1, sw sw nw 29-1n-13w	40	1370
Miller Bros., Schwab 1, nw sw se 33-2n-14w	*	1745
Arenac County—		
Pure Oil, McTaggart A-2, ne nw se 22-19n-3e	200	2892
Ervin Major, Spencer 2 nw sw sw 23-19n-3e	*	3010
Clare County—		
American Dr. Co., Sprung 1, c s nw sw 29-19n-6w	60	3868
State X-3, c n ne sw 29-19n-6w	120	3849
Goodrich Pet. Co., State 1, e½ e½ ne 29-19n-6w	*	3850
Cities Service, Phares 1, c w nw ne 32-20n-6w	104	3781
Pure Oil, Swindlehurst 2, c w ne nw 32-20n-6w	900	3772
Gratiot County—		
W. E. Ross, Tweed 1 c nw 6-10n-4w	*	1010
Kent County—		
E. R. Roach, Holden 1, ne se ne 28-9n-11w	*	2282
Missaukee County—		
Turner Pet. Co., DeBree 1, c s se ne 32-21n-7w	*	3944
Monroe County—		
H. L. McEvoy, Delaney 1, nw sw se 30-6s-6e	*	2130
Ottawa County—		
Muskegon Oil Corp., Zeeland Bank 1, nw nw ne 31-6n-14w	*	1702
Van Buren County—		
Clapsaddle & Harris, Niles 1, sw nw sw 24-1s-15w	*	1191

Mississippi

Clarke County (Wildcat)—		
Walsingham & Earles, School Bd. 1, 16-4n-15e	*	4057
Marshall County (Wildcat)—		
C. B. Blosser, Stansback 1, 19-3s-4w	*	655
Yazoo County (Tinsley Dome)—		
Hassie Hunt, McMurtray 2, 26-10n-3w	675	4840
Johnson Dr. Co., Logan 1, 1-9n-3w	*	5077
Magnolia, Payne 1, 36-10n-3w	*	5113
Union, Perry B-1 23-10n-3w	480	4594

Missouri

Atchison County—		
I. T. I. O., McGinnis 1, c se sw 12-66n-39w	*	2301

United States Well Completions—*Continued*

Montana

Glacier County (Cut Bank)—

Company, Well and Location	Init. Prod. Bbls.	Depth
Glacier Prod. Co., Connolly 3, se sw 6-33n-5w	17	2875
Lookhoff 4, sw se 33-33n-5w	189	2893
R. A. Killberg, Tribal 185, nw nw 19-32n-5w	198	2970
Santa Rita O. & G. Co., Tribal 13, ne sw 10-35n-6w	284	2938
Texas Co., Willis 2, lot 6, 20-32n-5w	0000	0000

Toole County (Kevin-Sunburst)—

Coolidge, Stone 2, se sw se 26-36n-2w	500	1621
Montana-Dakota Utilities Co. Sauby 317, ne nw 33-34n-1w	¶3.5	1238
M. F. Tole, Blumberg 2, nw nw ne 32-35n-3w	20	1734

New Mexico

Eddy County—

Aston-Fair et al, State 4-B nw ne sw 32-17s-30e	70	2886
Stroup-Yates et al, Ballard 2-B, nw se sw 8-18s-29e	300	2487

Lea County (Corbin)—

Helmerich & Payne, Inc., Corbin-Texaco 3-A, c se nw 10-18s-33e	¶13.5	4327

Lea County (West Eunice)—

Wilson Oil Co., State-Shell 12, c se se 12-21s-34e	*	3955

Lea County (Maljamar)—

Carper Dr. Co., Simon 7-N, c nw se 29-17s-32e	400	3940
Barney Cockburn et al, Pearsall 2-B, c nw ne 34-17s-32e	924	4203

Lea County (Vacuum)—

Phillips Pet., State-Santa Fe 43, c s½ nw nw 26-17s-35e	192	4560

New York

Allegany County—

R. B. Moore et al, Moran farm, Bolivar	6	1265
Franchot Oil Co., Murphy farm, Bolivar	7	1429
Putnam Oil Co., Birtoll farm, Wirt	8	1440
Star Oil Co., Neff farm, Scio	8	1231
Bradley Prod. Corp., Duke farm, Alma	6	1451
Fitz-Carroll farm, Bolivar	10	1387
L. H. Thornton et al, Fassett farm, Alma	5	1276
I. & H. Oil Co., Peterson farm, Wirt	4	1370
Merle Coats Est., Coats farm, Wirt	7	1256
Shaner Oil Co., Green farm, Genesee	6	1276
Martin O'Connor Est., O'Connor farm, Genesee	5	1362

WATER INTAKE WELLS

Allegany County—

Ella Murphy, Gadsby farm, Bolivar	...	1526
South Bolivar Oil Co., McKelvey farm, Bolivar	...	1356
R. B. Moore, No. 6, Thomas farm, Bolivar	...	1382
W. O. Taylor Est., Reid farm, Alma	...	1340
South Hill Oil Co., Harrington farm, Wellsville	...	1278

Ohio

Ashland County—

Price et al, Harpster 5	30	759
McMalley, Bone 1	*	547
Butler Bros., Morr 1	*	2949
W. G. Obrecht, Galloway 2	*	700

Athens County—

Ohio Fuel Gas, Pearson 2	¶0.21	1712
Sunday Creek Coal 193	*	560
Bern O. & G., Lambert Hrs. 2	*	985

Coshocton County—

Shuff & Bucy, Bucy 1	*	3240

Fairfield County—

City Nat. Gas, Brown 1	¶0.1	2215
Raab 1	*	2389

Guernsey County—

Ronshausen, Taylor 1	¶0.05	1232
Ohio Fuel Gas, Mathers 1	*	1827

Hocking County—

Preston Oil, Sunday Creek Coal 1760	¶0.4	956

Holmes County—

Ohio Fuel Gas, Mohr 1	*	3481
Lifer 1	*	2898

Knox County—

Ewing et al, Banbury 1	¶1.25	2751
Ohio Fuel Gas, Meakley 4	¶0.06	2752
McElroy 1	*	3010

Lawrence County—

Dave Fox, Pratt 1	¶0.12	2583

Licking County—

Allen Willey et al, Lynn 2	¶0.8	2644
Pound 3	¶0.5	2239
C. A. Davis, Bolen 2	¶0.24	2620
McCloy, Inc., Bebout 1	*	2810
Rowe 1	*	4360

Medina County—

Thornton Prod. Corp., Sanford & Watson 27-F	5	335
Sanford & Watson 28-F	5	372
Sanford & Watson 29-F	*	392
Sanford & Watson 30-F	5	389

Meigs County—

Ohio Fuel Gas, Dean 1	15	1699
Nolan Shuster, Nelson 3	¶1.66	962

Morgan County—

Harris, White 1	*	936
William et al, Carter 1	*	1425

Muskingum County—

Atha, Frick 2	*	3950

Noble County—

F. W. Fassett et al, Leasure 1	10	239
Yoker Valley Co., Denius 1	¶0.15	1609

Seneca County—

Lantz & Jones, Brandt 1	¶0.05	1590

Tuscarawas County—

Nat. Gas. Co. of W. Va., Dayton 2	0.66	4737

Washington County—

Thomas, Bingham, Longfellow 1	3	210
Ohio Fuel, Tresch 1	¶0.09	1504
Charles D. Fogle, Fee 4	*	1530

Oklahoma

Bryan County—

Pure, Little (207) 1, ne sw nw 34-5s-7e	564	5072

Caddo County—

Pace, Davis 5, nw sw nw 6-5n-9w	906	3405

Carter County—

S. & D. Daube, Fee 5, sw sw nw sw 17-4s-2w	154	2266
Neustadt, Choate 5, se se ne se 18-4s-2w	408	2159
Tide Water, Ward 3, c e½ se ne 19-4s-2w	600	2230
Batson & Sanders, Williams 9, c e½ 20-4s-2w (pb 2120)	35	2482
Gibson & Jennings, Herrell "A" 4, c w½ sw nw 20-4s-2w	1035	2241

Comanche County—

W. M. Smith, Truitt 10-A, nw ne sw se 26-2n-11w	*	230

Creek County—

L. B. Jackson, Posey 1, se sw nw 3-17n-9e (pb 2094)	15	2096

Garvin County—

Stanolind et al, Little 1, c e½ ne se 16 3n-1e	*	4866

Hughes County—

H. O. Pope et al, Manahan 1-A, nec nw 30-4n-9e	*	3003

Jackson County—

Pierce et al, Hardcastle 4, c n½ se sw 11-1n-20w	20	1648

Kiowa County—

Argo, Ratliff 3, nec 19-7n-17w	432	1144
Gled, Watkins 4, se sw nw 20-7n-17w (pb 1122)	¶20.0	1150

Muskogee County—

Haskell Gas Co., Damme 1, nw nwc se 1-15n-15e	¶0.4	1129

Okfuskee County—

Titus et al, Jackson 1, c nw 25-11n-8e	*	4008
Shell, Smith 1, sw se sw 26-11n-8e (pb 4237)	145	4242
Devonian, Phillips "A" 2, se nw sw 26-12n-8e	383	3663

Okmulgee County—

Redbed Royalty Co., Foster 1-A, ne ne se nw 25-14n-13e	*	1785

Osage County—

W. R. Dillard, Osage 1, sw ne nw 22-21n-9e	*	2988
I. T. I. O., 476, ne se ne sw 22-27n-11e	¶1.6	2116
Blackwell O. & G. 9, nw se sw 3-28n-11e (pb 953)	25	958
Vance et al 4, ne nwc ne 3-28n-11e (pb 952)	15	963

Payne County—

Gardner Pet Co., Lowry 1, c n½ se sw 12-19n-1w	177	4747

Pontotoc County—

J. D. Hanna, Gilmore 1-A, sw se sw 14-5n-8e	*	850

Pottawatomie County—

Culver & Shepherd, State 2, nec nw 16-5n-5e	1560	2568
Commercial Dr. Co., Bray 1, nec sw 6-7n-4e	*	4357
McCully 2, ne sw se 6-7n-4e	560	3958
McCully 3, sw se se 6-7n-4e	500	3952
J. F. Smith, Brundage 2, sw ne se 6-7n-4e	525	3958
Kerlyn, Ogee 2, ne se se 8-7n-5e	*	3402
Maud 1, ne se nw 32-8n-5e	184	4329

Seminole County—

J. F. Smith, Smith "A" 2, se nw ne 20-7n-6e	37	2399
Mid-Continent, Ferguson 5, swc 18-7n-8e	100	1516
Ray Steph et al, Ferguson 1, se nw nw 18-7n-8e	*	1744
Atlantic, Wolf 1, sec ne 30-8n-7e (pb 4284)	95	4287
Amerada, Miller 1, c n½ se se 25-9n-5e	*	4297

Tulsa County—

Elledge & Robinson, McKee 2, se sw nw 7-19n-11e (pb 1725)	¶1.5	1738

OLD WELLS DEEPENED

Jackson County—

Vaughn, Stokes 5, ne sw sw 11-1n-20w (otd 1350)	40	1368

Marshall County—

Pure, Thompson (206) 1, swc 21-5s-7e (otd 5056)	742	5107

Okfuskee County—

Wells et al, Fish 2-A, ne ne nw se 25-10n-11e (otd 2160)	¶3.0	3020

Pontotoc County—

Magnolia, Metro 6, nw ne ne 27-2n-7e (otd 4275	*	4447

Pottawatomie County—

Magnolia, Fyke "A" 2, se sw se 20-7n-5e (otd 2839)	122	4247

Seminole County—

Sinclair-Prairie, Sunny 5, ne nw nw 14-7n-6e (otd 4350)	100	4357

Shephens County—

Cities Service, Surber 9, sw sw se sw 33-1s-8w (otd 1680)	102	2316

GAS INPUT WELLS

Tulsa County—

Webber Oil Co., Morey 18, nw sw nw 15-17n-12e		1588

SALT WATER DISPOSAL WELLS

Kay County—

Tide Water, State 3, nwc sw 16-28n-1w		3695

Osage County—

Sinclair-Prairie, 11, nw swc se 9-25n-6e		2125

Pennsylvania

BRADFORD DISTRICT

Emmett H. Westran, McCaffrey & Westhran	1	....
Forest Oil Corp.	1	....
Forest Pet. Corp.	1	....
Niagara Oil Corp., 5 wells	5	....
Bradford Tr. Co., 22 wells	22	....
D. E. Quinlan Est., Fee	2	....

WATER INTAKE WELLS

D. Y. M. Corp., Bing 466	...	....
Forest Oil Corp., 2 wells	...	....
Forest Pet. Corp. 2 wells	...	....
Niagara Oil Corp., 2 wells	...	....
Penn Valley Crude Oil, Fee 2	...	....

NEW YORK- PENN GAS FIELD

Penn York Nat. Gas, Harden	*	....

MIDDLE DISTRICT

Fred Inze Lehnortt, Fee	¼	....
Alum Rock Gas Co., Griswold	*	....
S. H. Elder & Co., Elder	1	....

BUTLER-ARMSTRONG DISTRICT

Peters & Benninger, Peters	*	....

SOUTHWEST DISTRICT

Armstrong County—

Local Co., Kunselman 1	¶0.05	3285

Clarion County—

T. W. Phillips G. & O., Wolfgang 1	¶0.3	3117

Greene County—

Romney Rutan et al, Rutan 1	¶0.17 &	5 3284
Equitable Gas, Gideon 1	¶1.0	1653
H. E. Milliken, Minor 1	¶0.2	3446

Indiana County—

T. W. Phillips, Overdorff 1	*	3305

Westmoreland County—

Peoples Nat. Gas, Hines 1	¶0.09	3130

West Central Texas

Brown County—

Hou-San Oil Corp., Sewalt 3	42	956

Callahan County (Wildcat)—

E. E. Yates-L. M. York, Huestis 1	*	665

Coleman County—

Anzac Oil Corp., Morris 4-J	*	2722

Hamilton County (Wildcat)—

Groover-Rose et al, Fuqua 1	*	3485

Jones County—

Butler-Horne Dr. Co.-U. L. Miller, Merry 2	152	1918
J. E. Farrell et al, Mareska 8	*	2589

Mills County (Wildcat)—

C. L. Lane et al, Egger 1	*	1161

Shackelford County (Wildcats)—

Fain-McGaha Oil Corp., Dawson-Conway 1-B	*	1661
Glenn Myers et al, Green 1	*	835

Shackelford County—

Grossenbacher & Haggerty, Elliott 1-B	12	835
Roeser-Pendleton-Continental, Cook 4-A-118 (pb 1536)	20	1847

Taylor County—

J. B. Dunigan et al, Hunter 1	*	2505
Tal-Vez Oil Co., Lowe 1	33	2313

Texas Panhandle

Gray County—

Bradshaw O&G Co., Pope 7	104	3301
Cities Service, Hughey 21-B	66	3274
Gulf, Worley-Combs 5	202	3075
King Oil Co., Archer 10	232	3237
Simpson 10	187	3270
Ryan Cons. Pet. Corp., Barrett 2-B	41	3302
Stanolind, Waggoner 13	220	3305
D. R. Tripplehorn et al, Webb 7	40	2493

Hutchinson County—

Shell, Harvey Sisters 21-B	303	3077

Moore County—

Texoma Nat. Gas. Co., Beauchamp 1-P	¶7.9	3363

Wheeler County—

Charlotte Oil Co., Mitchell 2	119	2100
E. B. Clark et al, Sloss 3	207	2138

United States Well Completions—*Continued*

West Texas

Company, Well and Location	Init. Prod. Bbls.	Depth
Cochran County (Slaughter)—		
Honolulu Oil Corp., Igoe-Smith 4, Lab 5	801	5011
Crane County (Jordan)—		
Westex Oil Co., University-Shell 2-C	30	3598
Crane County (Sand Hills)—		
Humble, Tubb 54	1533	4406
Crockett County—(Crockett)—		
Zay Kimber et al, Robbins-Superior 1	*	1950
Crockett County (Soma-Noelke)—		
J. S. Pittman & Geo. Atkins, Noelke 2-D	1689	1479
Crockett County (Todd Deep)—		
Continental et al, Todd 8	624	5940
Crockett County (World-Powell)—		
Armer & Armer, Powell 11-A	264	2661
Ector County (Foster)—		
C. O. Davis et al, Judkins-Atlantic 2	709	4365
Stanolind, Johnson 22-A	70	4155
Sunray Oil Co., Johnson-Landreth 3-E	363	4181
Ector County (Goldsmith)—		
Continental T. P. Land Trust 6-C-25	203	4280
Gulf, Goldsmith 352	1034	4259
Goldsmith 353	781	4207
Ector County (North Cowden)—		
Carl B. King Dr. Co., Holt-Landreth 4-B	326	4386
Gaines County (Seminole)—		
Amerada, Riley 7	827	5250
Gaines County (Wasson)—		
Continental & Amon Carter, Wasson 10-48	1435	4965
Hockley County (Slaughter)—		
Delta Dr. Co., Slaughter 1-C	411	4964
Honolulu Oil Corp., Frazier 5	1200	5000
Mallet 4-B (3558-ac)	1151	5030
Sid W. Richardson et al, Coe 10	839	4985
Slaughter 23	922	4965
Slaughter 16-B	972	4995
Slaughter 3-C	1104	4995
W. J. Richardson et al, Allison-Sun 3	734	4985
Texas Co., Mallet 2-B	1369	5020
Mallet 2-E	1038	5035
Pecos County (Abell)—		
Magnolia, Crockett 2	1685	5303
Pecos County (Walker)—		
Cardinal Oil Co., White-Baker 2-G	62	2031
Pecos County (Wildcats)—		
Cardinal Oil Co., White-Baker 1-I	*	1685
Wray Richards et al, Bennett-Shell 1	*	2005
Scurry County (Sharon)—		
D. & R. Oil Co., Burney 9	158	2501
Upton County (Gulf-McElroy)—		
Gulf, McElroy 245	190	3180
Upton County (McCamey)—		
T. P. Coal & Oil Co., Shirk 2-C	193	2639
Trebol Oil Co., Rodgers-Shell 3	145	2693
Upton County (McClintic)—		
T. P. Coal & Oil Co., Bell 1-A	486	3135
Ward County (Shipley Deep)—		
Gulf, Wristen Bros. 6 (9015-ac)	782	7080
Ward County—		
Gulf, O'Brien 168 (pb 2681)	69	2710
Magnolia, Sealy 1-42	314	2907
Westexas Oil & Roy. Corp., University 9-C	2264	2700
Winkler County (Halley)—		
Skelly Oil Co., Halley 39	814	2880
Winkler County (Hendrick)—		
Bates-Reading Oil Corp., McCabe-Shell 7	260	3026
Stanolind - Westbrook - Thompson, Hendrick 1-T-88-H-X	424	3000
Winkler County (Keystone)—		
Sam Weiner et al, Jenkins-Conoco 7	238	3426
Yoakum County (Wasson)—		
Argo Oil Corp., Comer 2-B	1667	5180
Denver P&R Co., Whittenburg 29	1058	5163
North Shore Corp., Bennett-Humble 2	1040	5276
Bennett-Humble 3	1140	5275
Oil Dev. Co. of Texas, Willard 2-743	260	5190
Sinclair Prairie, Willard 4	859	5278

East Texas

Company, Well and Location	Init. Prod. Bbls.	Depth
Kilgore Area—		
Kirby Pet. Co., Reddic 20 (81.16-ac)	900	3702
Magnolia, Hughey 14 (80.53-ac)	4000	3522
Overton Ref. Co., Wade 2	500	3670
Shell, Carr 9 (45.15-ac)	1500	3476
Willoughby 34 (57.7-ac)	1200	3600
Tide Water, King 21 (81.18-ac)	960	3666
Longview Area)—		
Cox & Hamon, Rodden 19 (110-ac)	3200	3625
FHE Oil Co., et al, Jones 4 (19-ac)	3000	3649
T. W. Lee et al, Bumpas 13 (31.6-ac)	2500	3555
Magnolia, White 31 (80-ac)	4500	3536
Anderson County (Long Lake)—		
Tex Harvey Oil Co., Cartmel 2	406	5464
Franklin County (Talco)—		
Magnolia, Rutherford 6	650	4267
Gregg County (Willow Springs)—		
Union Prod. Co., Hays-Magnolia 1	¶56.0	7400
Shelby County (Joaquin-Logansport)—		
McDaniel et al, Swann 1, Ann Gray sur	¶11.5	5106
Smith County (Chapel Hill)—		
Shell, Browning 1	933	8372
Van Zandt County (Van)—		
Preston Calvert et al, Carter 4	473	2898
Wood County (Wildcat)—		
Bill Urbanic et al, Snyder 1	*	1750
Wood County (Hawkins)—		
Humble, Smith 1, Tr. 1 (126-ac)	414	4837
A. Surratt 1 (43.21-ac)	320	4819
L. B. Orr et al, Smith 1	510	4840
WATER DISPOSAL WELL		
Hopkins County (Sulphur Bluff)—		
Texas Co., E. Davis 5-S	*	690

North Texas

Company, Well and Location	Init. Prod. Bbls.	Depth
Archer County (Hull-Silk)—		
J. A. Chapman et al, Wilson 3 (pb 4115)	1344	4745
Archer County—		
Guy J. Brown et al, Hughes 3	*	1132
E. C. Harlin, Jr., et al, Baker 2	*	1160
T. S. Love et al, Montgomery 1	*	1125
Pet. Producers Co., Koester 2	264	1121
Koester 2	*	1170
Rathke Oil Co., Harmel 7	*	1455
Whitehill Oil Corp., Morrison 30	*	820
Archer County (Wildcats)—		
Akin-Dimock & Costley, Wells 1	*	1256
Bridwell Oil Co., Bridwell 1-C	*	1642
Baylor County (Rendham)—		
British American O. P. Co., Green 3-K	29	3027
Clay County (Antelope)—		
Shell, Henderson 9 (new pay) (pb 5760 ft)	3200	6100
Clay County—		
C. E. Beavers et al, Schumaker 1	*	1374
A. P. Kouri et al, Duncan-Elliott 1	*	1351
Ted Norwood et al, Bilbry 1	*	1204
Perkins-Cullum, Taylor 4-A	360	1083
Sussex Oil Corp., Glasgow 25	223	1085
Cooke County—		
Kingery Bros. Dr. Co., Martin 1 (pb 928)	10	1485
Mudge Oil Co., Johnson 28	*	1304
Jack County (Wildcat)—		
Joe Worsham et al, Simpson 1 (pb 3028)	8	3152
Montague County (Benton-Holmes)—		
Ross Dr. Co., Custers-Phillips 3	19	2899
Throckmorton County—		
Burk Roy. Co., Housley 2	10	650
Housley 3	12	667
Combined Oil Co., Housley 4	11	708
Cross & Peterman, Harrell 2	12	611
A. L. Wasson et al, O'Dell 7	4	368
Wichita County (K-M-A Ellenberger)—		
Shell & Phillips Pet., Griffin 22-E	2572	4368
Wichita County (K-M-A)—		
Mid-Union Dr. Co., Fassett-Tuttle 7	120	4062
Lincoln & Moore, Bradley 2	384	3862
Wichita County—		
Akin-Dimock-Costley, Oates 2-B	33	1298
J. Lewis Jackson et al, Seals 1	*	1431
W. A. Krohn et al, Jennings 8	1½	100
Jennings 9	1	102
Jennings 10	1½	103
Jennings 11	1	100
Chas. E. Morrison et al, Preston 1	*	1810
Ted Norwood et al, Lessler 2	*	1350
A. C. Parks et al, Roller 3	*	648
Geo. M. Shaner et al, Waggoner Est. 2-B	*	734
Waggoner Est. 3-B	*	503
Waggoner Est. 4-B	8	394
Wichita County (Wildcat)—		
Staley Oil Co., Carden 1	*	670
Wilbarger County (Fargo)—		
Amerada, Parker 2	904	3968
Humble, Anderson 1-B (pb 3978)	352	4470
Lewis Prod. Co., Bond 1, sec 46	*	4804
Wilbarger County—		
Consolidated Oil Co., Ancell 1-B	69	1766
Geo. T. Davis et al, Waggoner Est. 2	*	1582
Waggoner Est. 7	10	525
Waggoner Ref. Co., Waggoner Est. 11-CC	96	1112
J. A. Woods et al, Womack 3-D	104	1800
Young County—		
Anzac Oil Corp., Graham 2	24	4028
Paul Atchley et al, Guimarin 1	*	1049
Burma Pet. Co., Dunagan 6	75	918
P. C. Burns et al, Clark 1	*	929
Carey & Carey, Vaughn 4 (pb 3900)	¶20.0	4108
Goldsmith-Mitchell-Ard, Dunagan 2	*	980
N. Gray et al, Bagley 1	*	627
E. W. Hunt et al, Gass 13	*	1216
H. R. Loftin et al, Loftin 2	*	630
W. F. Palmer et al, Marshall-Morgan 1-B	26	923
Pemeta Oil Co., Johnson 19	10	554
Johnson 20	10	552
Ray Oil Co.-Nash, Bills & Horn 1	888	4074
Young County (Wildcat)—		
Hayden Farmer et al, Logan 1	*	1050

Texas Gulf Coast

Company, Well and Location	Init. Prod. Bbls.	Depth
Brazoria County (Damon Md.)—		
Pan American, Kountz 2	*	7903
Brazoria County (Old Ocean)—		
Harrison & Abercrombie, BRLD C-1	487	10,943
Meador 1	276	10,478
Shary et al 1	380	10,877
Brazoria County (Sandy Point)—		
J. A. Fite, Fee 1	33	6500
Colorado County (Garwood)—		
W. R. Davis, Inc., Brownson B-1	301	6310
Fort Bend County (N. Thompson)—		
Gulf, Scanlan 6	*	8427
Naylor, Gehr B-10	*	7910
Galveston County (Green's Lake)—		
Sun, Houston Fms. 6	*	6800
Hardin County (Sour Lake)—		
H. F. Baker, Swayne 1	86	1696
Harris County—		
C. L. Tissue, Schoneman 1	*	6505
Harris County (Goose Creek)—		
Newton & Lillie, Busch 1	33	2169
Jefferson County (Labelle)—		
Sun, Broussard & Hebert 9	66	6607
Jefferson County (Lovell Lake)—		
Humble, Broussard Trust 25	182	7807
Liberty County (Esperson)—		
General Crude, Esperson A-44	*	5840
Polk County (Deep Segno)—		
Humble, Kirby B-39	48	8195
Wharton County—		
Lon Cron & Ray, Reynolds	*	7010

Southwest Texas

CORPUS CHRISTI DISTRICT

Company, Well and Location	Init. Prod. Bbls.	Depth
Jackson County (Cordele)—		
Frost & Dunnam, Pressley 2	350	2756
Jackson County (Lolita)—		
Humble, L. Ranch 5-B	1200	5938
Magnolia, Mitchell 19	500	5303
Jackson County (West Ranch)—		
Magnolia, West 153-A	450	5579
West 154-A	400	5764
Jim Wells County (Wade City)—		
Jack Taylor et al, Welhausen 1	150	4926
Live Oak County (White Creek)—		
Holland & Smith, Miller 4	*	1425
Nueces County (Agua Dulce)—		
H. H. Howell, Schulze 6	500	6980
Texon Royalty Co., Austin 3	750	7018
Nueces County (S. Clara Driscoll)—		
Magnolia, Johnson 9	†	2750
Refugio County (Tomoconnor)—		
Quintana, Heard 46	1500	5925
Refugio County (LaRosa)—		
Rutherford & Royal, Schirmer 7-A	*	6350
Victoria County (Heyser)—		
Gulf, Traylor 54-B	450	5485
Victoria County (Victoria)—		
John Coffee, Hiller 1	650	3034
Victoria County (Wildcat)—		
W. S. Boyle, Ragadale 1, Garcia gr	*	6009

LAREDO DISTRICT

Company, Well and Location	Init. Prod. Bbls.	Depth
Duval County (Bridwell)—		
J. B. Blanchard, Rogers 1-B	50	4373
Duval County (Casa Blanca)—		
Magnolia, DCRC 2(88)	35	1061
Jim Hogg County (Colorado)—		
Humble King-Colorado 6-B	400	2903
King-Colorado 17-B	300	2916
S. Robertson, Trevino 1	250	2934
Jim Hogg County (Manila)—		
Magnolia, Merchants 48	70	2569
Jim Hogg County (Wildcats)—		
G. E. Sawyer, Allen & Heller 1, sur 22	*	3312
Sun, S. K. East 2, Santo Domingo gr	*	5102
Starr County (Rincon)—		
Continental, Slick 31-A	*	4565
Starr County (Sun)—		
Sun, Speer 10	550	4918
Starr County (Wildcat)—		
T. B. Hoffer, Guerra 1. Por 107	*	3747
Webb County (Killam)—		
O. W. Killam, Garcia-Villareal 7	80	2060
Zapata County (Escobas)—		
Dulup Oil Co., Garcia 6-C	*	1114

SAN ANTONIO DISTRICT

Company, Well and Location	Init. Prod. Bbls.	Depth
Caldwell County (Bee Creek)—		
R. R. Ogden Miears 6-B	503	2154
Miears 3-B	*	2421
Caldwell County (Tenney Creek)—		
Ellmag Oil Corp., Connoly 3-B	65	3550
F. W. Weigand, Rhodes 2	78	2665
Frio County (Pearsall)—		
Cowan & Davis, Davies et al 1	150	3920

OLD WELL DEEPENED

Company, Well and Location	Init. Prod. Bbls.	Depth
Guadalupe County (Wildcat)—		
R. T. Newton, Vorpahl 1, Christopher sur (otd 1025)	*	1135

Wyoming

Company, Well and Location	Init. Prod. Bbls.	Depth
Park County (Oregon Basin)—		
Enalpac O. & G. Co., Pauline OPC-1, 3 se se 5-51n-100w	150	3816

WILDCAT REPORT
New Starts and Completions

ALABAMA

COMPLETIONS

Madison County—W. W. Newman, Tr.'s Nichols 4, ne ne 2-6s-2e, sg 275-80 ft, sul w, abnd 305 ft.

CALIFORNIA

FIRST REPORTS

Glenn County—Holly Sugar Co.'s No. 1, sec 32-22-1, Cretaceous test for gas, dr 150 ft, Orlando area.

Kern County—Section 27 Oil Co.'s Aslin 1, sec 27-28-22, lcn, South Belridge area. Richfield Oil Corp.'s Tejon 2, sec 19-11-18, lcn, Grapevine area.

Los Angeles County—Sunset Oil Co.'s Baldwin 1, sec 11-2-11, grading rds, Puente Hills area. Fullerton Oil Co.'s La Habra 7, sec 25-2-11, rig, Whittier-La Habra area.

Ventura County—Osmere Cook's King 1, sec 33-4-19, lcn, Bardsdale area. Purple Oil Co.'s No. 1, sec 17-3-20, rig, South Mountain area.

KANSAS

FIRST REPORTS

Cowley County—Miller et al's Tonkinson 1, c w½ sw nw 17-33-6e, pits. Marylyn Oil Co.'s Mosier 1, nec se 20-34-7e, dr.

Dickinson County—A. R. Jones et al's Kunz 1, c e½ e½ se 6-16-4e, dr.

Ellsworth County—Cities Service's Padlena 2, se nw se 26-14-10w, dr.

Greenwood County—Allison et al's Porter 1, nw ne nw 25-28-8e, dr.

Kearney County—Stanolind's Patterson 1, c e½ se se 23-22-38w, mim.

Phillips County—Helmerich & Payne et al's Loyd 1, c s½ se se 6-4-17w, dr.

COMPLETIONS

Barton County—H. H. Blair et al's Peirano 1, c n½ ne ne 4-16-11w, new horizon Davison pool, Lansing 2930 ft, pay 3016-20 ft, td 3020 ft, 4000 gals acid, 500 bbls, 40.9-gr.

Butler County—Rex & Morris et al's Lucas 1-A, ne sw ne 26-28-6e, 3 mi e Pettit pool, Mississippi 2818 ft, abnd 2815 ft.

Graham County—R. W. Shields et al's Waggel 1, c s½ sw se 28-7-24w, 4 mi nw Penokee pool. Anhydrite 2095 ft, Neva 3055 ft, Lansing 3710 ft, Topeka 3422 ft, sand 4157 ft, Conglomerate 4171 ft, Arbuckle 4301 ft, abnd 4333 ft.

Greenwood County—H. Brinegar et al's Kellar 1, nwc se 28-26-13e, Toronto area, abnd 150 ft.

McPherson County—Winkler-Koch et al's Kaufman 1, c e½ ne ne 8-22-1w, 2 mi ne Garber pool, Lansing 2370 ft, Mississippi 2962-3300 ft, Misener 3349-50 ft, Hunton 3353 ft, Viola 3465 ft, Simpson 3499 ft, Arbuckle 3572 ft, abnd 3618 ft.

Pratt County—George Reeves et al's Stark 1, c w½ sw nw 18-26-11w, 10 mi ne Iuka pool, new pool, Anhydrite 640 ft, Ft. Riley 1970 ft, base Florence 2115 ft, Topeka 3065 ft, Lansing 3602 ft, Mississippi 3965 ft, Viola 4123 ft, Simpson 4210 ft, Arbuckle 4289 ft, td 4339 ft, pb 4159 ft, 100 gals acid 11,960,000 feet gas.

Rice County—Continental's Taylor 1, sw se sw 17-18-6w, 10 mi e Geneseo pool, Lansing 2797 ft, Mississippi 3298 ft, abnd 3368 ft. Herndon Dr. Co. et al's Timbers 1, nwc ne 8-21-8w, 2 mi n Sterling, otd 3522 ft, perf 3440-46 ft and 3348-53 ft, abnd 3522 ft.

Rush County—Magnolia's Conrad 1, c e½ ne sw 33-19-17w, 10 mi sw Otis fld, Anhydrite 1230 ft, Lansing 3582 ft, Conglomerate 3920 ft, Arbuckle 3957 ft, abnd 4018 ft.

SOUTH LOUISIANA

FIRST REPORTS

Allen Parish—W. T. Burton's Calcasieu Nat'l Bank 1, Oberlin pros, sec 21-5s-3w, rig.

Avoyelles Parish—S. W. Richardson's Haas Land Co. 1, 2 mi nw Eola fld, 10¾-in at 2105 ft, woc, sec 30-1s-2e.

Calcasieu Parish—Pan American's La. Farm & Min. Co. 1, Moss Lake pros, sec 8-11s-9w, lcn.

COMPLETIONS

Plaquemines Parish—Texas Co.'s State 1, Delacroix Island pros, perf 8915-25 ft, ip 3,500,000 ft, gas, tp 3350 lbs, little dist, td 11,165 ft.

Terrebonne Parish—Bering Oil Co.'s Land 1, South Schriever area, sec 9-16s-16e, elec log, no shows, abnd 10,522 ft.

NORTH LOUISIANA

FIRST REPORT

Nachitoches Parish—J. E. Watts' Tanner 2, ne sw nw 18-10n-10w, rig.

COMPLETIONS

Union Parish—Carter Oil Co.'s Farley 1, ne sw 10-20n-1w, elec log, abnd 5103 ft.

Winn Parish—Sells Pet. Co.'s Feazel 1, c n½ 26-13n-3w, sg in Wilcox 1800-2500 ft, abnd 4510 ft.

Claiborne Parish—Harold A. Wright's Rainach 1, sw ne 16-22n-5w, abnd 5510 ft.

MICHIGAN

FIRST REPORTS

Cass County—N. N. Smith's Wilhelm 1, nw sw se 12-8s-15w, lcn.

Midland County—Dougherty & Markey's Jondrow 1, sw nw sw 16-15n-2w, dr.

Ogemaw County—Weber Oil Co.'s State F1, nw sw nw 33-24n-2e, dr.

Roscommon County—Sun's Hogan 3, c se se 31-22n-4w, dr.

COMPLETIONS

Allegan County—M. B. Keeler's Lull 1, ne se sw 36-1n-16w, Traverse 1142 ft, abnd 1165 ft. C. W. Cook's Boers 1, se sw nw 6-4n-14w, Traverse 1553, abnd 1557 ft. Miller Bros. Schwab 1, nw sw se 33-2n-14w, Traverse 1298 ft, abnd 1345 ft.

Kent County—E. R. Roach's Holden 1, ne se ne 28-9n-11w, Traverse 2243 ft, abnd 2282 ft.

Missaukee County—Turner Pet. Corp.'s DeBree 1, c s½ se ne 23-21n-7w, Dundee 3913 ft, so 3914 ft, water 3916 ft, abnd 3944 ft.

Ottawa County—Muskegon Oil Corp.'s Zeeland Bank 1, nw nw ne 31-6n-14w, Traverse 1640 ft, abnd 1702 ft.

MISSISSIPPI

COMPLETIONS

Clarke County—Walsingham & Earles' School Board 1, sw nw ne 16-4n-15e, so 3662-65 ft, abnd 4057 ft.

Marshall County—C. B. Blosser's Stansback 1, se se 19-3s-4w, abnd 655 ft.

MISSOURI

COMPLETIONS

Atchison County—Jackson & Rust et al's Hayes 1, c ne ne 22-66n-42w, otd 2192, Hunton 2092 ft, Sylvan 2750 ft, Viola 2797 ft, St. Peter 3200 ft, Arbuckle 3236 ft, abnd 3289 ft.

Caldwell County—Robert Wells & Son's Withers 1, swc se 28-55n-28w, shallow gas area, abnd 420 ft.

Holt County—Thorsen & Pebley's Grant 1, c se se 23-62n-40w, Lansing 607 ft, Mississippi 1898 ft, base Mississippi 2109 ft, Hematite 2120 ft, Hunton 2310 ft, abnd 2360 ft.

NEBRASKA

FIRST REPORTS

Furnas County—Helmerich & Payne et al's Leising 1, c se 14-3n-23w, dr.

Richardson County—Midland Oil Co., et al's Gebhard 1, nec 1-2n-15e, dr.

COMPLETIONS

Otoe County—Zimmer et al's Roddy Estate 1, c s½ se sw 31-9n-14e, n of Nebraska City, Mississippi 1050 ft, hfw 1634 ft, Hunton 1608 ft, Maquoketa 1905 ft, Viola 1936 ft, hfw 2300 ft, Simpson 2320 ft, St. Peter 2395 ft, hfw 2395 ft, Arbuckle 2484 ft, abnd 2500 ft.

Sarpy County—L. H. Hough et al's Timm 1, c w½ sw se 15-13n-12e, Mississippi 235 ft, csg 335 ft, abnd 425 ft.

NEW MEXICO

FIRST REPORT

Lea County—Gene Pipkin and Hal Cave's Cunningham 1, swc 22-19s-35e, lcn.

OKLAHOMA

FIRST REPORTS

Cleveland County—Sinclair Prairie et al's Craig 1, nec se 30-8n-1w, rur.

Coal County—Ramsey Pet. Corp.'s Harryman 1-A, nw se nw 27-2n-9e, testing.

Creek County—Mid-Continent's Bear 1, sw se sw 3-14n-7e, dr.

Garvin County—Ohio's Feaster 1, nwc se 13-3n-1e, lcn.

Hughes County—R. O. Bailey et al's Williams 1, swc ne 14-9n-10e, dr.

Jefferson County—Jack Johnson's Barrith 1, c sw se ne 14-6s-6w, dr.

Marshall County—J. S. Batson et al's Walden 1, c ne nw nw 34-6s-6e, dr.

Okfuskee County—Texas Co.'s McKernan 1, c n½ nw sw 15-12n-9e, mim. S. E. Vierson et al's Harper 1, nwc ne 16-13n-7e, dr.

Pottawatomie County—C. W. Sharpe et al's Billington 1, nw se se 21-9n-4e, dr.

COMPLETIONS

Creek County—Burke-Greis Oil Corp.'s Peabody 1, sw se sw 20-14n-9e, 1½ mi se Deep Fork pool, Hogshooter 1160 ft, Layton zone 1175-1230 ft, Oswego 2289-2310 ft, Broken Prue 2372 ft, sands 2625-40 and 2680-2700 ft, Inola 2830 ft, Bartlesville 2835-2980 ft, Mayes 3670 ft, Woodford 3865 ft, Misener 3895 ft, Sylvan 3900 ft, Viola 3967 ft, Dolomite 3995 ft, First Wilcox 4017 ft, abnd 4028 ft.

Grady County—W. H. Atkinson et al's Jelks 1, nec se 22-5n-7w, deep test in shallow Harness gas fld, sand 4358, abnd 5003 ft.

Hughes County—B. L. Crowell et al's Turner-Lucas 1-B, swc nw 13-9n-9e, 2 mi se Papoose pool, Lower Wewoka 515 ft, Calvin 807 ft, Henryetta Coal 1160 ft, Allen 1180 ft, salt sd 2085 ft, Booch 2630 ft, abnd 3382 ft.

Logan County—G. & M. Dr. Co. et al's Basserman 1, se ne se 22-15n-3w, abandoned Seward area, Pawhuska 3000 ft, Oread 3935 ft, Avant 4345 ft, Checkerboard 4985 ft, Big lime 5580 ft, Oswego 5625 ft, base Pennsylvania 5895 ft, top Chattanooga Hunton 5998 ft, Sylvan 6022 ft, Viola 6121 ft, Dense 6151 ft, first Wilcox 6255 ft, second Wilcox 6364 ft, abnd 6383 ft.

Okfuskee County—Bill Smith et al's Johnston 1, se ne ne 22-10n-11e, 1 mi e Weleetka, new pool, Booch 2051 ft, sd 2348 ft, td 2410 ft, 4,000,000 feet gas, 700 lbs rp, Texas Co.'s Butcher 1, c n½ se nw 15-12n-9e, 2 mi se Mason, new pool, Oswego 1618 ft, Prue 1665 ft, Inola 2550 ft, Salt sd 2580 ft, Brown lime 2790 ft, Booch 2940 ft, Gilcrease zone 3150-80 ft, Cromwell 3300 ft, Mayes 3690 ft, Woodford 3795 ft, Hunton 3820 ft, Sylvan 3861 ft, Viola 3955 ft, Dense 3980 ft, Solomite 3982 ft, First Wilcox 3998 ft, Second Wilcox 4030 ft, td 4048 ft, pb 3323 ft, shot 10 qts 3310-23 ft, 57 bbls, 41-gr. Shell's Smith 1, sw se sw 26-11n-8e, new horizon North Cromwell pool, Second Wilcox 4224 ft, td 4242 ft, pb 4237 ft, shot 33 qts, 145 bbls, 37 gr.

Osage County—C. S. Miller et al's Osage 2, sw ne sw ne 18-24n-8e, ½-mile ne extension for Kasishke pool, Big lime 1999-2058 ft, Oswego 2161-2210 ft, Miss Chat 2523-36 ft, Hominey Wilcox 2796-86 ft, td 2847 ft in sand, pb 2845 ft, shot 15 qts 2835-45 ft, 100 bbls, 41-gr.

Pottawatomie County—Hembree-Hembree et al's Swan 1, se ne nw 29-6n-5e, 1 mi se Gray pool, Earlsboro 2650 ft, Mayes 2860 ft, Woodford 3010 ft, Misener 3240 ft, Hunton 3245 ft, Sylvan 3350 ft, Viola 3465 ft, Dense 3515 ft, Dolomite 3595 ft, Wilcox 3795 ft, abnd 3832 ft.

Stephens County—T. H. McCasland et al's Prine 1, se nw nw 12-2n-5w, 1 mi se Knox pool, sand 1555-64 ft, water sd 2473-2513 ft, abnd 2513 ft.

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SOUTHWEST TEXAS

FIRST REPORTS

Bee County—W. C. McBride, Inc.'s Shumbera, 99.82-ac tr, B&SL sur 16, 5 mi w Skidmore, lcn 4750-ft Vicksburg test.

Bexar County—Jack Tarver et al's Ueckel 1, Burchard sur, 15 mi se San Antonio, mi for 2000-ft test.

Caldwell County—Wiegand Bros.' Epstein 1, Ambrose Tinney lg, 2 mi ne Tenney Creek fld, dr 2100 ft, F. W. Wiegand's Williams 1, J. J. Bowman sur, ½-mi ne Tenney Creek fld, 7-in csg 2360 ft, dr in chalk.

Duval County—Colmena Oil Co.'s DCRC 1-A, blk 17, sec 52, 2800 ft w Colmena fld, spud 2400-ft test. Magnolia's Weil 1, C&M sur 129, sp 2500-ft test.

Jim Hogg County—H. L. Bedwell's Palacios, blk 17, sec 287, ¾-mi e Randado fld, lcn 3000-ft test.

Jim Wells County—O. W. Killam's Wade Est. 15, lot 5, blk D, 2900 ft nw Sandia fld, lcn 4000-ft test.

LaSalle County—Trinity Pet. Co.'s Storey & Kenley 1, H&GN sur 141, 8 mi s Los Angeles, contract awd for 5500-ft Wilcox-sand test.

Medina County—M. B. Duke's Wiemers 1, J. Bader sur, 5 mi s Dunlay, lcn 1800-ft test.

Nueces County—Seaboard Oil Corp.'s Chapman et al 9, sec. 45, Ynojosa gr, 10 mi nw Chapman ranch, prep mi for 6500-ft test.

Refugio County—Norsworthy Prod. Co.'s Toland 1, sec 39, Bonnie View Ranch, 1 mi ne LaRosa fld, lcn 6500-ft test.

Victoria County—Spencer & Huck's Angerstein 1, Hendershot sur, 12 mi ne Victoria, sp 6000-ft test.

Zavala County—Humble's Wolf et al 1, blk 12, Cross S. Ranch, Aguirre gr, 7½ mi n Crystal City, mi 6000-ft Edwards-lime test.

COMPLETIONS

Guadalupe County—R. T. Newton's Yorpahl 1, Christopher sur, 1½ mi s Elm Creek fld, deepened from 1002 to 1135 ft, minor show, abnd.

Jim Hogg County—Gregg E. Sawyer's Allen & Heller 1, sw Scoggin sur 22, 17 mi sw Hebbronville, abnd 3312 ft. Sun's S. K. East 2, Santo Domingo gr, abnd 5102 ft.

Starr County—T. B. Hoffer et al's Guerra 1, sh 34, por 107, 18 mi n Rio Grande City, abnd 3747 ft, tested sw and oil, scum 3645-65 ft.

Victoria County—W. S. Boyle's Ragsdale 1, V. Garcia gr, 4 mi s Inez, abnd 6009 ft, no shows.

WEST CENTRAL TEXAS

FIRST REPORTS

Callahan County—Ungren-Frazier et al's Russell 1, ne nw nw BBB&C sec 118, lcn.

Eastland County—Sims Dr. Co.'s Vernon 1, nec H&TC sec 9, blk 2, lcn.

Jones County—M. J. Delaney et al's Short 1, sw se sw BBB&C sec 191, lcn.

Shackelford County—Ellis A. Hall et al's Dyer 1, swc T&P sec 73, blk 12, sp. T. S. Stanfield et al's Fincher 1, near c s½ T&P sec 7, blk 11, lcn.

Taylor County—W. H. Peckham et al's Perry 1, nwc blk 5, Grimes csl league 124, sp.

COMPLETIONS

Callahan County—E. E. Yates-L. M. York's Huestis 1, nec nw TE&L sec 3198, abnd 665 ft.

Hamilton County—Groover-Rose et al's Fuqua 1, sw part of 500-ac tr, J. W. Bowers sur, abnd 3485 ft.

Mills County—C. D. Lane et al's Egger 1, sec 4, Wm. Hayes sur, abnd in Ellenberger 886-1161 ft.

Shackelford County—Fain - McGaha Oil Corp.'s Dawson-Conway 1-B, se sw nw E. T. Ry. sec 196, abnd 1661 ft. Glen Myers et al's Green 1, T&P sec 68, blk 12, abnd 835 ft.

EAST TEXAS

FIRST REPORTS

Angelina County—S. D. McDaniel et al's Bonner 1, 100-ac tr, Sarah O Dell sur, rur.

Houston County—O. W. Killam et al's Houston County Coal Co. 1, sec 64-ac tr, C. M. Goolsby sur, rur.

Smith County—Iowa Payne Oil Co. et al's Spring Lake Club 1, John Lane sur, dk, R. L. Pruitt, C. M. Pope Jr. et al's Cawthon 1, sec of 50-acre tr, Jacob Mast sur, lcn.

Van Zandt County—F. R. Jackson-Thompson et al's Bruce 1, swc of 109.8-ac tr, B. Bruton sur, dr 300 ft.

COMPLETION

Wood County—Bill Urbanic et al's Snider 1, center 12-ac lse, S. Castleberry sur, elev 306 ft, abnd 1750 ft.

NORTH TEXAS

FIRST REPORTS

Archer County—McKanna, Inc.'s Snyder 1, sw nw TE&L sec 2601, lcn. C. L. Shive et al's Cowan 1, nec se blk 28, Jefferson CSL sur A-240, lcn. Bridwell Oil Co.'s Bridwell 1-D, ne nw TE&L sec 1853, Gunsight 804-06 ft, broken sand 835-38 and 853-60 ft, cem 7-in pipe 853 ft, testing. Staley Oil Co.-L. C. Heydrick's Donahue 1, A. Edwards sur A-124, lcn.

Jack County—Alma Oil Co.'s Maxsey 1, nwc w½ S.P. Ry. sec 2, A-2233, dr 2760 ft. Hill & Hill, Inc.'s Kinder 1, sec of A. B. Kuykendall sur A-2351, mim.

Montague County—Walter Gant and Continental's Turner 1, nec E.T. Ry. sec 59, A-253, lcn deep test.

Young County—Jerome McLester et al's Hall 1, se of T. J. Combs sur A-1298, sp 4000-ft test.

COMPLETIONS

Archer County—Akin - Dimock - Costley's Wells 1, ne part W. Hassel sur A-755, abnd 1256 ft. Bridwell Oil Co.'s Bridwell 1-C, sw nw TE&L sec 1827, abnd 1642 ft.

Clay County—Shell's Henderson 9, TE&L sec 2605, new pay for Antelope pool, Goen lime 3735 ft, Bend 4988 ft, Mississippian 5622 ft. Ellenberger 5975-6100 ft, used 2000 gals acid through perf 5715-60 ft, flowed 1200 bbls oil 9 hrs open tubing with 4,000,000 ft gas daily.

Jack County—Joe Worsham et al's Simpson 1, J. W. Abbey sur A-11, new pool from worked over wildcat failure, td 3152 ft, pb to 3028 ft, shot 30 qts nitro 3005-22 ft, pumped 8 bbls initial.

Wichita County—Staley Oil Co.'s Carden 1, swc Wm. Anglin sur A-2, abnd 670 ft.

Young County—Hayden Farmer et al's Logan 1, se nw TE&L sec 234, abnd 1050 ft.

WEST TEXAS

FIRST REPORT

Borden County—Coffield & Guthrie, Inc.'s Conrad 1, c nw L.N. Co. sec 79, blk 20, lcn 3250-ft test.

COMPLETIONS

Pecos County—Cardinal Oil Co.'s White-Baker 1-I, near se nw nw T.C. Ry sec 21, blk Z, abnd in sul w 1681-85 ft. Wray Richards et al's Bennett-Shell 1, n cor H&GN sec 68, blk 10, elev 2445 ft, abnd hfw 2000-05 ft.

TEXAS GULF COAST

FIRST REPORTS

Fort Bend County—Cockburn Oil Corp.'s Leveridge 1, lot 36, Frazier & McCormick sur, nw cor county, lcn for 8500-ft test. Jerry Sebesta's Tubbs Bay 1, near Big Creek, Barnabas Wickson sur, lcn.

Jefferson County—Humble & Shell's Gallier 1, w of Clam Lake, se cor of T&NO sur 347, lcn for 11,000-ft test.

Liberty County—Rowan Dr. Co.'s Willis 1, H&TB sur 7, 4 mi sw of Nome, lcn.

COMPLETIONS

Harris County—C. L. Tissue Dr. Co.'s Schoneman 1, Daniel Harmon lg, 3 mi n Bammel fld, abnd 6505 ft.

Wharton County—Lon Cron et al's McGill 1, s edge Lissie pros, sec 34, abnd 7010 ft.

Sub Surface CONTROL
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The front line of defense for producers is at the bottom of the well. Here the Otis Tubing Safety Valve will guard your wells . . . shutting them off automatically should any destructive force damage surface connections.

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MEN IN THE INDUSTRY'S NEWS

DON H. CRALL, superintendent for Stanolind Oil & Gas Company at Wewoka Oklahoma, has been named chairman of the Seminole chapter of the American Petroleum Institute's Division of Production, succeeding Coxey Evans. Other officers named last week were Al West, engineer for The Carter Oil Company at Seminole, first vice chairman; Sam Trant, engineer for The Atlantic Oil & Refining Company at Seminole, second vice chairman, and W. R. Warren, engineer for Stanolind Oil & Gas Company at Wewoka, secretary-treasurer.

DR. C. F. RASSWEILER has been named director of research for Johns-Manville Corporation, New York. He has been director of the Philadelphia laboratory of E. I. du Pont de Nemours Company. Born in Polo, Illinois, Dr. Rassweiler was graduated with a bachelor of science degree in chemistry from the University of Denver in 1920. He secured his master's degree from the University of Illinois in 1922, and his Ph.D. from the same institution in 1924. He joined the du Pont organization in 1924 as a research chemist, and since 1932 he has been director of the du Pont Laboratory in Philadelphia.

C. G. TYLER, formerly with the railroad division of Manning, Maxwell & Moore, Inc., in the Chicago district, has joined the industrial division to take over the territory served from Columbus, Ohio. This district was formerly covered by Win Adams, who has been transferred to the Buffalo territory. Arthur B. Bleecker, formerly with the Los Angeles Branch of Creamery Manufacturing Company, will represent four of the company's industrial divisions in the Pacific northwest, covering the Seattle and Portland territories.

STEPHEN B. HAYNES has been elected assistant treasurer of Cochrane Corporation, Philadelphia. A 1924 graduate of Yale University, he had previously been associated with the Mathieson Alkali Works, Inc., in a sales promotional capacity, and Associated Drygoods Corporation, in financial work.

W. C. PINKERTON, for the past six years assistant technical editor of Chemical Engineering Catalog, has resigned to join the monel and rolled nickel advertising department of The International Nickel Company. He will edit house publications devoted to those industries.

D. A. KALTON and A. W. Thomas have been named assistants to the sales manager of the construction equipment division of Chain Belt Company, Milwaukee. Kalton joined the company in 1932 on graduation from Marquette University, and has served in the home office sales department and as eastern district manager. Thomas, a civil engineering graduate of Purdue University, joined the company in 1927. He has been connected with both sales and engineering departments of the construction equipment division.

H. W. FIELDS, former store manager for Frick-Reid Supply Corporation at Rodessa, Louisiana, has been placed in charge of a new store opened by the company at Oil City, Mississippi. George C. Pryor, connected with the Rodessa store for several years, has been named manager to succeed Fields.

JOSEPH A. LA FORTUNE, vice president of Warren Petroleum Corporation, is chairman of a committee of oil men endeavoring to secure summer jobs for students of the University of Tulsa. Members are O. C. Schorp, executive vice president, The Carter Oil Company; Frank Pickell, division production superintendent, Stanolind Oil & Gas Company; A. L. Cashman, manager land and lease department, Skelly Oil Company, and Reid W. Bond, production manager, Shell Oil Company.

JOHN C. ARP, H. D. Howard Sr., Merl Teeters Stockham, Walter Hunnel and L. B. McWethey have organized Indian Hill Oil Company with offices at the Indian Village, Cheyenne, Wyoming. The company shortly will start a rotary test on a block of 40,000 acres on Indian Hill Dome, Laramie County, Wyoming.

JOSEPH L. BORDEN, assistant chief geologist for The Pure Oil Company and president of the Tulsa Geological Society, addressed that group May 26 on "Review of the Pennsylvanian of Oklahoma."

C. H. FRALEY and Frank Watson have organized the Frason Oil Company to operate in the Texas Panhandle with headquarters at Borger.

L. H. SHARP, assistant division operating superintendent for Atlantic Refining Company, Tulsa, retired from active service on June 1, completing 23 years of continuous employment with the firm of which 18 were spent in the refining branch and five years in production. Sharp began his career in the West Virginia and Parkersburg area, and later went to Ohio before coming to Oklahoma and Kansas.

PHIL H. EDWARDS has rejoined Texasteel Manufacturing Company, Fort Worth, as chief engineer. He had been with Mid-Continent Supply Company, engaged in an engineering capacity since 1939; had been with Texasteel Manufacturing Company from 1937 to 1939, and had been with Oil Well Supply Company from 1933 to 1937.

V. P. RUMELY, works manager at the Chicago plant of Crane Company, has been named vice president in charge of manufacturing, succeeding J. H. Collier, who recently was made president of the company. Rumely studied mechanical engineering at Purdue University, and later at the University of Wisconsin, graduating in 1912. His first job was in the farm implement plant of his grandfather, M. Rumely, in La Porte, Indiana. In 1914-15, he was with Buick Motor Company, and in 1916 went to Hudson Motor Company. Starting in the Hudson Motor Company shops, he progressed through every stage of production management to superintendent and factory manager, the position he held when he resigned to join Crane Company in 1937.

LAWRENCE E. BROCK, 59, drilling contractor of Abilene, Texas, was killed May 22 in an auto accident while en route from Fort Worth to the Sharon Ridge field. Gerald M. Heinzelmann, Snyder, and pioneer in the latter field, received injuries.

JOHN C. CARROLL, sales manager for Engineering Laboratories, Inc., Tulsa, has resigned to accept a position with Douglas Aircraft Corporation. He will be stationed at Santa Monica, California.

C. E. STRONG has been named Rocky Mountain and Canadian representative for the oil tool division of Byron Jackson Company, with headquarters at Casper, Wyoming.

C. T. EVERETT, vice president of National Bank of Tulsa, has been elected to the board of directors of Superior Oil Corporation.

D. C. HAMILL, with Ecuador Oil Field, Ltd., Ecuador, is vacationing at Norman, Oklahoma, where his sister resides.

R. E. HISSOM, formerly with Taber & Coleman, drilling contractors of Shawnee, Oklahoma, is now vice president in charge of drilling for Hissom Drilling Company, Tulsa. His headquarters are at Great Bend, Kansas.

OSCAR N. LINDAHL, comptroller and secretary of the Universal Atlas Cement Company, has been elected vice president in charge of finance for Carnegie-Illinois Steel Corporation, Pittsburgh. He succeeds M. D. Howell, who will devote all his time to duties as vice president, secretary and treasurer of United States Steel Corporation of Delaware. Born in Sweden, Lindahl came to America and attended public and private schools in Chicago. He was employed by Butler Brothers in Chicago from 1900 to 1907, when he joined Illinois Steel Company. He joined Universal Atlas

MEN IN THE INDUSTRY'S NEWS

Cement Company in 1911, serving successively as general bookkeeper, chief accountant, auditor and assistant secretary, and comptroller and secretary.

M. R. DILL has been named a director and general counsel of The Lincoln Electric Company, Cleveland. He attended the Wharton school of the University of Pennsylvania for his pre-law education, and in 1930 graduated from the law school of Ohio State University. On graduation, he joined the Cleveland law firm of Squire, Sanders & Dempsey.

Re-elected were J. C. Lincoln, board chairman; J. F. Lincoln, president and general manager; C. M. Taylor, vice president; A. F. Davis, vice president and secretary; G. G. Landis, chief engineer; Harold F. Kneen, plant superintendent, and J. W. Meriam and W. B. Stewart, directors.

GEORGE A. MUSSELLMAN, geological department of The Carter Oil Company, has been transferred from Seminole to Tulsa, replacing Clark T. Snider, who will do field work during the summer months.

JAMES A. LEWIS, Core Laboratories, Inc., Dallas, discussed "The Application of Oil Field Core Analysis Data to Production Problems," before the Illinois Geological Society, meeting last week at Mattoon.

WILLIAM F. KRUEGER, representative of Sperry-Sun Well Surveying Company in Oklahoma and Kansas, has recently been called for active duty by the Army. A first lieutenant, he will be stationed at Camp Livingston, Louisiana.

A Message to SMART TOP MEN who choose key-men

You know that it costs thousands of dollars to make an all around key executive out of an un' ained man. You know from your experience that the secret of success of great business executives is the ability to find men others have trained, thereby saving the training cost and at the same time importing new ideas.

My successful experience proves that I am a well-rounded, trained key-man . . . seven years in oil well supplies . . . practical experience in accounting, buying, transportation credit, office and general management.

Employed at present but want to return to the oil industry. The fact that I am seeking to put my administrative experience to doing bigger things for my employer proves that I am the calibre that big men want.

Make money by saving training money and by using my well-seasoned ideas. Write today.

c/o The Oil Weekly
BOX 404 **HOUSTON, TEXAS**

DOUGLAS RAGLAND, former assistant division engineer for Humble Oil & Refining Company at Houston, has been promoted to division engineer and stationed at Corpus Christi. He is succeeded at Houston by T. J. Fuson.

H. M. STEVENSON, chief engineer for Humble Pipe Line Company; Chester Lundt, mechanical engineer, and R. J. Johnson, division engineer, have been transferred to New York and Portland, Maine, to work on design and construction of a pipe line being built from Portland to Montreal, Canada, by Standard Oil Company of New Jersey.

J. R. VANDEVER, Texas-New Mexico division superintendent for Sunray Oil Company, has transferred headquarters from Wichita Falls to Fort Worth, where office is located in the Fair building. J. F. Adkisson, petroleum engineer, will also have headquarters at Fort Worth.

WILBUR T. FUNK, 65, retired executive vice president of The Carter Oil Company, died May 26 in Dallas. Born in Titusville, Pennsylvania, he was engaged as a telegraph operator for the Erie Railroad and later was auditor for a number of years for Standard Oil Company of New Jersey. In 1919, he was placed in charge of The Carter Oil Company's operations in the Rocky Mountain area, with headquarters first in Cheyenne, and later at Casper and Denver. He went to Tulsa as executive vice president in 1925, serving until his retirement on July 1, 1932.

H. S. LINDENMUTH, former Tulsa salesman for Larkin Packer Company, St. Louis, has been named manager of the company's northern division, comprising Illinois, Indiana, Kansas, Nebraska and Oklahoma. He will make his headquarters at Tulsa.

H. S. Lindenmuth

In other rearrangements of sales territories, W. H. Adamson, former northern division sales manager, has been named manager of the western division, comprising the Texas Panhandle, North Texas, West Texas and New Mexico, and will make his headquarters at Odessa. Tom E. Alexander, with headquarters at Houston, is the manager of the southern division, comprising Louisiana, Arkansas, Mississippi, Texas Gulf Coast, and Southwest Texas.

H. H. Francis has been named to work the Kansas territory, with headquarters in Great Bend, succeeding Ed Wallace, called to military service. Jack Hancock will work the North Texas area, with headquarters in Wichita Falls, and H. J. Stewart, who recently joined the company after several years in an oil company's engineering department, will work the Houston area.

"MECO" Free Flow

MUD LINE FITTINGS

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90° Ell

MECO Mud Line Fittings are designed to eliminate pressure drop by reducing turbulence caused by change in direction of flow.

Furnished in 90° or 95½° Ell with 2" side outlet, Tee, 90° Ell, 95½° Ell, 160° Standpipe Ell and 45° Ell. Sizes 2" to 6".

Suitable for mud pressures up to 3,000 pounds

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EXPLORATION GEOPHYSICS

By

H. J. JAKOSKY, Sc. D.

EXPLORATION GEOPHYSICS describes the fundamental theories, equipment and field techniques of the recognized exploratory geophysical methods and illustrates their application to problems of economic geology. Concisely and clearly written, it is a valuable book for geophysicists; geologists; teachers, physicists; petroleum, mining and civil engineers; supervisors and production men of oil and mining companies; supervisors and directors of public works; patent attorneys; prospectors; et al., who need the latest and most up-to-date, authoritative information. Unequalled in completeness of authoritative information and clarity of expression. It is a complete compilation of modern Geophysical techniques.

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Squeaks from the Bull Wheel

Story Shortened

A ventriloquist attended a negro funeral unknown to the mourners. Afterward, one of them told another what had happened at the cemetery.

"You won't believe it, Mose," the narrator said, still wild-eyed, "but when dey begins to lowah Joe in his grave, he says, 'Lemme down easy, boys.'"

"And did dey finish burying him?"

"Man, Ah don't know. Ah didn't stay."

Wrong Recipe

How did you make this cake, dear?

Here's the recipe. I clipped it from a magazine.

Are you sure you read the right side? The other side tells how to make a rock garden.

Got His Wish

Dad, what was your great ambition when you were a boy?

To wear long pants. And I've had my wish. If there is anybody else in the country that wears his pants longer than I do, I'd like to see him.

A "Cutting" Remark

"I just heard him say he was in close touch with the heads of several big organizations!"

Yes, he's a barber!

Customer Was Right

Clerk: "No, madam we haven't had any for a long time."

Manager (overhearing): "Oh, yes; we have it madam. I will send to the warehouse and have some brought in for you."

(Aside to clerk): "Never refuse anything. Send out for it."

As the lady went out laughing, the manager demanded: "What did she say?"

Clerk: "She said we haven't had any rain lately."

Recorded

A minister, traveling on one of those way-trains that stops at every station on a side line, was reading his Bible.

"Find anything about htis railroad in that book?" asked the conductor.

"Yes. In the very first chapter it says that the Lord made every creeping thing."

Why Wait?

Father: "There's plenty of time for our daughter to think about marriage. Let her wait till the right man comes along."

Mother: "Why should she? I didn't."

Slight Difference

"That new stenographer—you surely did not hire her on account of her grammar!"

"Grammar! I thought you told me to pick one out for 'glamour'!"

Social Error

"I'll never go anywhere again with you as long as I live."

"Why?"

"You asked Mrs. Smith how her husband was standing the heat, and he's been dead two months."

Knew Him

Medium: "Madam, the spirit of your husband wishes to speak to you."

Madam: "It can't be! Henry never had any spirit."

That Was All

"It's that family in the apartment above me. They are always disturbing me. Why this morning about 1:30 they were jumping up and down on the floor as hard as they could. I don't have to put up with it."

"I presume the disturbance woke you up?"

"Oh, no, I hadn't gone to bed. I was just rehearsing a number that I'm singing for the Women's Club tomorrow."

Hopes Realized

"Have you ever realized any of your childhood hopes?"

"Yes; when mother used to comb my hair I often wished I didn't have any."

Strong Words

"I'll bet you were mad when you ran over that skunk."

"Mad? I was highly incensed."

"WE HIT BOTTOM WATER LAST NIGHT— but we're drilling as usual today!"

You don't need to worry about bottom water when you have Eagle Lead Wool in your storeroom. This soft, pliable wool forms a solid, secure plug under tamping pressure... seals off water pronto . . . fills every corner and crevice. Eagle Lead Wool is rapidly installed with Eagle Wire Containers. Sizes to fit all casings. Shaped like cartridge to carry lead wool to cavity in one mass. Be prepared for bottom water—order today through your jobber.

These 3 Eagle Bearing Metals meet most requirements..

Eagle Dreadnaught — for extreme speed and pressure conditions

Eagle Outlasta — for medium speed and pressure conditions

Eagle Durable — for low speed and pressure conditions

EAGLE LEAD WOOL

Seals off bottom water PRONTO!

EAGLE EP PICHER

THE EAGLE-PICHER LEAD COMPANY
CINCINNATI, OHIO

How Wear and Cutting are further retarded in the Mission Plug Valve because of its cylindrical core

You can see that straight-sided core will fit perfectly.

The Mission cylindrical or straight core is always in perfect contact with the body throughout its area due to grinding each core-half to the exact curvature of the body.

Since the Mission core is split through the center, clearance is provided which prevents wedging. A tapered plug cannot fit its body as snugly as a Mission core unless it is wedged — then you have difficult turning.

Obviously, the fit of the Mission core will maintain a satisfactory lubricated seal longer. This is further assured in the Mission valve by grease grooves which completely encircle each port. *Satisfy yourself — test a Mission Plug Valve.*

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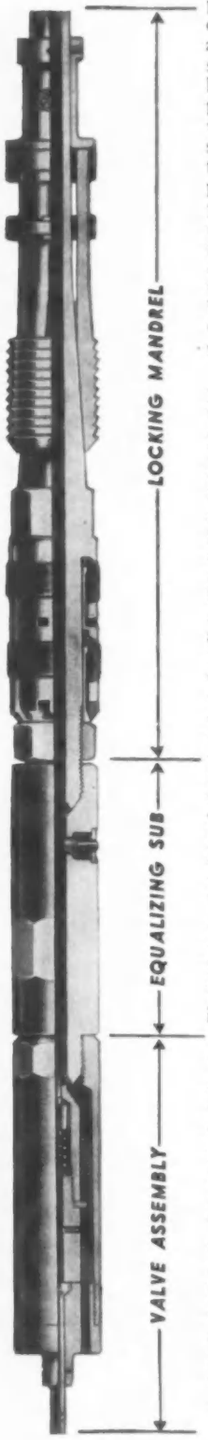
NOTES FOR THE Equipment Buyer and User

Equalizing Sub

OTIS PRESSURE CONTROL, INC.

An equalizing sub designed to provide a safe and fast means of equalizing pressures across the company's removable bottom-hole safety valves, regulators and chokes, particularly where well conditions such as unbalanced tubing and casing pressures, or casing packers, prohibit equalizing by connecting tubing and casing together at the surface, has been announced by Otis Pressure Control, Inc., Dallas.



The device is a by-pass valve built in the side of a special sub made to go between the mandrel assembly and the main valve assembly of the company's sub-surface controls. The position of the by-pass is below the tubing sealing cups and above the main control valve, and it consists of a ground seat built into the side of the sub in which a valve and stem fit. A small spring acts to hold the valve closed, while an orifice plate pressed in the sub holds the assembly in place. The valve has a rounded nose that protrudes into the bore of the sub ⅛-inch. This protruding nose is designed not to interfere with the normal operation of the choke, regulator or safety valve, but to provide a means for the operator to open the by-pass when desired. Under normal operations, the valve is held closed by the differential pressure across the sub-surface control, and at this time serves no purpose.

To open the by-pass valve, a special equalizing tool is run in the hole on the conventional steel line, jars and stem. This device has a long prong with a tapered end extending from the body of the tool. This prong passes through the bore of the mandrel assembly and sub, and forces the protruding valve nose back, opening the by-pass. One stroke of the jars is usually sufficient to drive the prong past the valve to lock it open. The by-pass valve is designed so the effective opening through the ground seat is larger than the effective opening in the orifice plate to reduce the differential across the ground seat and minimizes the cutting action on these parts. The orifice has been designed sufficiently small so that the velocity of the flow through the by-pass cannot blow the tools up the hole regardless of the extremity of the pressure encountered. As soon as the prong is pulled out of the sub, the small spring snaps the valve closed, making it ready for normal operation again.

This sub has approximately the same outside and inside diameters as the mandrel assembly on which it is run. It is made to fit all of the company's latest Type B regulators, safety valves and chokes.

Welding Equipment

The Linde Air Products Company, 30 East 42 Street, New York, has issued a 12-page booklet on "What the Purchasing Agent Should Know About Oxyacetylene Welding and Cutting Equipment and Processes." The booklet is designed to help the user or prospective user obtain a clear understanding of the oxyacetylene process and the various construction and operating features of welding and cutting apparatus used in applications of the process.

Waterproof Cement

Smooth-On Manufacturing Company, 570 Communipaw Avenue, Jersey City, New Jersey, has issued a folder briefly summarizing applications of its waterproofing cements. It shows how seepage can be stopped from the inside of cellars or cisterns, how cracks or holes in concrete can be repaired, and how to make dustproof and waterproof floors.

Ratchet Wrench

J. H. WILLIAMS & CO.

A reversible ratchet wrench 4½ inches long and with a ¼-inch square drive has been added to the Superratchet line of J. H. Williams & Co., 225 Lafayette Street, New York.

It employs a double-tooth pawl for both on and off rotation. A shift lever

Williams' Reversible Ratchet Wrench

at the head is provided to reverse the wrench action. The handle is drop-forged from high-tensile carbon steel, and working parts are machined from chrome-molybdenum steel and heat-treated. The wrench is finished in chrome-plate over nickel.

Illuminated Magnifier

E. W. PIKE & COMPANY

An illuminated magnifier, powered by dry cell or from current from an AC or DC outlet, designated Flash-O-Lens, has been announced by E. W. Pike & Company, Elizabeth, New Jersey.

Pike & Company's Illuminated Magnifier

The unit employs a double lens system, with lenses precision ground and polished. It may be taken apart for cleaning, and when reassembled the lenses are automatically refocused by a spacer ring.

A side opening in the lens housing permits use of instruments or a pencil on the object under observation. The field of vision is illuminated by an electric bulb so placed in the handle that direct light does not reach the eye. In two styles, the 5-power magnifier has a 2-inch field of vision with a working distance of 1⅛ inches, while the 7-power unit has a 1-inch field with working distance of ¾-inch.

A Bausch & Lomb wide-field, low-power microscope may be adapted to the Flash-O-Lens to provide observation of work carried on several inches from the objective lens. It supplies magnification of 20 times. A portable microscope may also be used to provide magnification of 40 times.

Potentiometer

BROWN INSTRUMENT COMPANY

A circular chart potentiometer to indicate and record temperature has been announced by The Brown Instrument Company, Wayne & Roberts Avenues, Philadelphia.

The instrument's balancing system is continuous, and does not employ a galvanometer. All live parts are enclosed, and sensitivity may be adjusted for correct operation on any standard pyrometer range to make all amplifiers interchangeable. The balancing motor is a brushless, reversible induction motor with built-in gear reduction. Totally enclosed, it drives pen, pointer and slide rule.

Rectangular case has die-cast door,

Brown Instrument's Potentiometer

with cam action combination handle and lock provided to draw door tightly against case. A baked black enamel finish is provided to resist corrosion in moist, salt or acid atmospheres. Universal mounting is provided to permit flush or front-of-board mounting.

The pointer is 8 inches long, gear driven by a balancing motor. Scale is concentric 320°, with 1-inch black bold-face numerals on white field graduated the same as the chart to make distant readings visible from any position. Pen and arm are 8 inches long, stainless steel with ribbed reinforcement. Chart is 12 inches wide, and chart clips mounted on the door are provided to hold the chart flat against the chart plate. A synthetic sponge gasket to resist oil is provided to seal the door and make the case dust- and moisture-proof. The pen, pointer and slide wire are directly connected to the balancing motor at all times. A stainless steel cable, unaffected by atmospheric conditions and securely clamped to both slide wire and driving drums, is designed to provide a positive drive to the slide wire.

The BUCK CLAMP Is Designed to Fit the Lay of the Line . . . *Eliminating Kinking*

Buck Clamp offers numerous advantages over conventional clamps. Its clamping surfaces are scientifically formed to fit the lay of the wire and this positively prevents kinking the line. It provides greater gripping area, higher clamping strength, and employs only one bolt. It is faster, safer and more dependable. Write for full details and prices. Buy Buck Clamp from your Supply Store.

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HOUSTON, TEXAS
Export: WKM Co., Inc.,
74 Trinity Place, N.Y.C.

Paint

THE UNITED STATES STONEWARE COMPANY

A paint developed for protection of metal, concrete and wood surfaces against corrosion and chemical reactions, designated Tygon, has been announced by The United States Stoneware Company, 60 East 42 Street, New York.

It is made to withstand action of nitric, hydrofluoric, hydrochloric, sulphuric and chromic acids, and salts and alkalies. It may be brushed or sprayed, and is available in a wide range of colors. One gallon covers about 200 square feet.

Du Pont to Build Neoprene Plant at Louisville, Kentucky

E. I. du Pont de Nemours & Company, through President W. S. Carpenter, Jr., last week announced construction of a new neoprene synthetic rubber plant at Louisville, Kentucky.

Construction will start immediately, and the plant will have a capacity of 10,000 long tons a year, exceeding the present 6000-long-ton total combined production of synthetic rubbers made at the company's plant at Deepwater, New Jersey. Additional facilities now under construction will increase production at the Deepwater plant to 9000 long tons a year.

The new construction is intended to provide a supply of neoprene that will be adequate for all defense and commercial needs. Neoprene now is on the government's mandatory priority list.

McEvoy Company Entertains 150 Oil Men at Barbecue

Officials of McEvoy Company entertained 150 oil men at the company's plant recently. A barbecue lunch was served in the shops, after which visitors inspected plant facilities. Of special interest to many was a section devoted to manufacture of machine gun mounts for the Army as a part of the national defense program.

An intermitter gas lift was set up for demonstration on the grounds.

New Ohio Distributor Appointed For Bucyrus-Erie Spudders

The Zanesville Tool & Supply Company, Zanesville, Ohio, has been appointed distributor for Bucyrus-Erie Company's oil well spudders in Ohio.

The company maintains an office and warehouse at Zanesville, with resident salesmen located at Marietta, Newark and Wooster. B. R. Straker is president of the firm, and handles the Northern Ohio territory.

Buda Engine & Equipment Moves Headquarters to Dallas

Buda Engine & Equipment Company has moved its head office and central warehouse from Houston to 1901 Canton Street, Dallas. The company will continue to maintain an office and store in Houston.

Builders-Providence, Inc. Is Meter Subsidiary of Builders Foundry

Builders Iron Foundry, Providence, Rhode Island, has announced it will conduct its metering business under the name of Builders-Providence, Inc., and

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The Wico AP Magneto is specifically designed to meet the 24-hour uninterruped needs of the oil fields. Features include adequate ventilation, high voltage spark output, moisture resistance, long coil life and accessibility. Condenser, coil, breaker points can be replaced with an ordinary screw driver, without removing magneto from the engine. See your local Wico authorized dealer.

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SPRINGFIELD, MASS.

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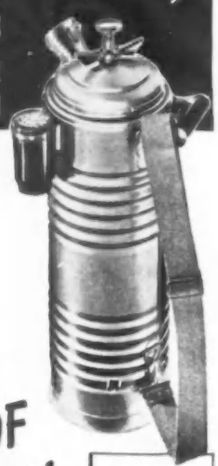

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U. S. Geological Survey, Washington, D. C.

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Carl W. Correns, Stina Gripenberg, W. C. Krumbein, Ph. H. Kuenen, Otto Pratje, Roger Revelle, F. P. Shepard, H. C. Stetson, Parker D. Trask, Chairman

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THE AMERICAN ASSOCIATION OF PETROLEUM GEOLOGISTS
Box 979, Tulsa, Okla., U. S. A.

as a division of Builders Iron Foundry with the same directors and officers.

The company was started in 1820 as a foundry mainly to supply cast iron columns and miscellaneous cast iron hardware then being used in construction of buildings. A machine shop was added several years before the Civil War, and since then the company has been engaged primarily in manufacturing.

Testing Instruments

C. J. Tagliabue Manufacturing Company, Park and Nostrand Avenues, Brooklyn, New York, has issued Catalog 699E describing its line of more than 100 petroleum testing instruments. In addition to listing ASTM thermometers and API hydrometers, it features the company's entire line of miscellaneous and general testing thermometers and hydrometers. New and improved apparatus for testing acid, heat, gum stability, Ramsbottom carbon residue, grease consistency, kinematic viscosity, flash and fire are illustrated and described.

Steel Tubes

The Babcock & Wilcox Tube Company, Beaver Falls, Pennsylvania, has issued Technical Data Card 113 giving maximum allowable working pressures for seamless steel tubes, nipples or flues with outside diameters from ½- to 5-inch, and wall thickness from 0.055- to 0.5-inch for water tube boilers and fire tube boilers.

V-Belting

Manheim Manufacturing & Belting Company, Manheim, Pennsylvania, has issued a bulletin on its Veelos adjustable V-belting which shows, by means of pictures almost entirely, the various educational ideas employed in presentation of the company's sales message.

LETTERS

Reprint at Pleasure

DEAR MR. DUDLEY:

Only now have I gotten around to reading the article titled "Caught Up and Fed Up" beginning at page fourteen of the April fourteenth number of THE OIL WEEKLY.

An article on the fall of France, by Somerset Maugham, was published in several successive issues of the Saturday Evening Post. It was a good article, or succession of articles. Yet, in comparison, your article in THE OIL WEEKLY deserves the combined circulations of the Post, Liberty, and Collier's.

With no reflection on the circulation-coverage of THE OIL WEEKLY, I'm hoping that it may be found possible to give this piece of yours much wider circulation than it has yet had. Maybe, just maybe, with enough reiteration of the facts, people will begin to realize how much our rulers have succeeded in making Commies of us all.

M. G. STEWART.
Pelican Well Tool & Supply Co.
Shreveport, La.

Thanks. The editorial in question has been republished in at least one company house organ of which we know, and possibly more. We have given complete permission for its reprinting to anyone who desires to reprint it.

R. L. DUDLEY.

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The President's Action

By RAY L. DUDLEY, Publisher

As THE OIL WEEKLY went to press Saturday morning word came from Hyde Park that President Roosevelt has taken over the oil business and has named Harold Ickes as dictator.

Of course the wording of the proclamation doesn't refer to "taking over the oil business" nor is the word "dictator" used in connection with Ickes, but the oil industry realizes fully what has happened and the public will have cause to realize it later.

If there ever was an industry which was conducting its own affairs in a manner to provide ample supplies to the civilian and armed forces of the Nation, that industry is the oil industry.

If there ever was a man ill-fitted by temperament, by training, and by natural instinct to manage a great industry, that man is Harold Ickes.

Probably much will be made of a threatened shortage of gasoline on the Atlantic Seaboard, which threat has had much to do with talk of steel proration for the oil industry and of a pipe line from Texas to a point near Bayonne, New Jersey. But the public must realize that this situation has come about solely because facilities which the industry has maintained for years, ample facilities, have been requisitioned by the government and put into the service of moving foreign oil to England at a time when England still chooses to move oil from Iran (Persia) around the tip of Africa, in what is a 22,000 mile round trip (instead of taking the oil from nearer home), thereby putting a heavy strain on the American tanker situation. The industry accepted the loss of its tankers and began planning to take care of the Atlantic Seaboard situation by other means.

There is no oil shortage and will be none unless the inefficient handling of oil matters by Ickes brings it about. The President's action is simply a fruition of a desire which has been in his mind and that of Ickes for several years. That he dares to do this is not only an evidence that practical thinking is absent from some of the administration's actions, but it also is evidence of the development of a daring which, in the minds of many, will not stop with one industry, but which aims at not only the temporary control, but the permanent control, of the nation's industries by a group surrounding and including the President.

In his speech on Tuesday night the President referred to the fear which many people have that in this struggle in which the nation is embarked, democratic government will be lost. He did not say, and possibly did not realize, that the fear was a fear of what he and his close advisers might do. That such a fear has been warranted is evidenced by the word which came Saturday from Hyde Park.

What will the industry do? The oil industry will do its very best in a struggle which has already involved this country in a war possibly only a few days short of a shooting war. The American oil industry can do nothing less than its very best, even though that best will be hampered by the antagonistic management and probable vindictive tampering of a man who has no qualities nor specific traits of ability to handle the job.

But the oil industry, as an American industry, operated by American citizens, is not yet compelled to give up the right of free speech, nor the right to aspire to a continuance of democratic principles and the perpetuation of a form of economy which entitles those engaged in it to own property in their own right.

The President has plead for unity on many occasions. His speech of Tuesday night pointed out a grave peril which the nation must recognize. We believe that the elements within America wish to contribute to unity—but the President certainly is going about achieving it in a manner calculated to damage it, and to give rise to the gravest fears of his ultimate aims.

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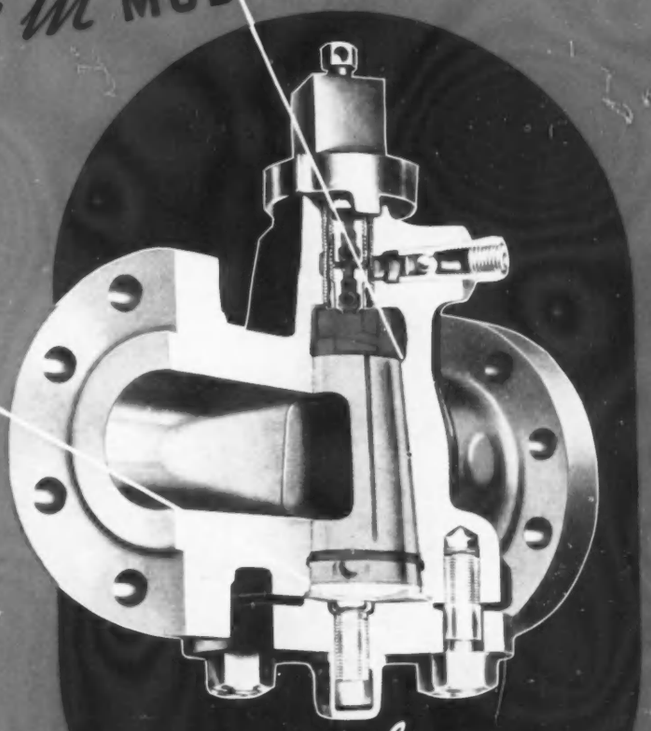
lengthens valve life in MUD LINE *service*

Continuous operation without repair of any kind, with no evidence of erosion, is the amazing accomplishment of Nordstrom Merchromed Valves in the many tests made to date. The impregnable armor of Merchrome which protects the plug and interior of the valve body defies scoring and abrasion. It offers the lowest coefficient of friction. When disassembled for inspection, after months of service, a Merchromed Valve shows no evidence of wear or cutting. No valve application has heretofore proved so invulnerable to the severe wear imposed in mud line service. The Merchromed surfaces actually improve with use. Here is your solution to the valve problem in your mud lines. Nordstroms keep upkeep down. Request full details.



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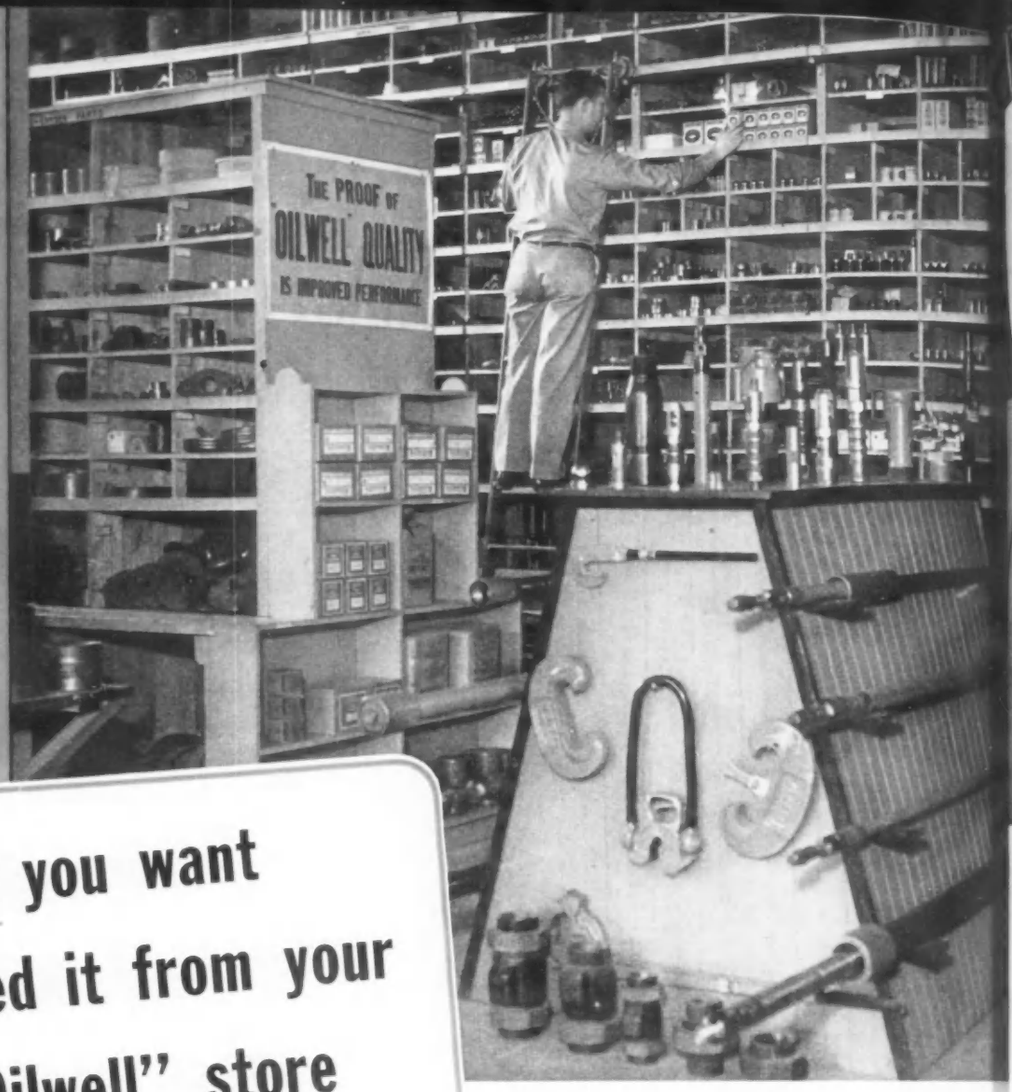

Whatever you want—a bull plug or a pumping unit—is available from "Oilwell's" completely stocked stores.

Get what you want when you need it from your nearest "Oilwell" store

EVERY "Oilwell" store is stocked with materials carefully selected to best suit the operating needs of the territory it serves. This is as true of hardware and miscellaneous supplies as it is of machinery and parts.

Supporting the substantial stocks at the branch stores are strategically located warehouse stocks and the facilities of manufacturing plants — all smoothly coordinated to serve the oil industry promptly and efficiently.

Every "Oilwell" store is manned by trained supply men who are familiar with the equipment needs of their respective territories. Also on call are experienced engineers and equipment specialists—always ready to be of genuine service to "Oilwell" customers.

Thus, men, materials and all facilities of the supply industry are mobilized to give you *what* you want *when* you need it at your nearest "Oilwell" store.

"Oilwell" Branch Store at Willow Springs, Texas—one of the 100 "Oilwell" supply bases serving United States and Canada.

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BAKER CEMENT WASH-DOWN WHIRLER FLOAT SHOE

. . . And You Can Be Sure of CC (CEMENTING CONTROL) with a BAKER CEMENT WASH-DOWN WHIRLER SHOE

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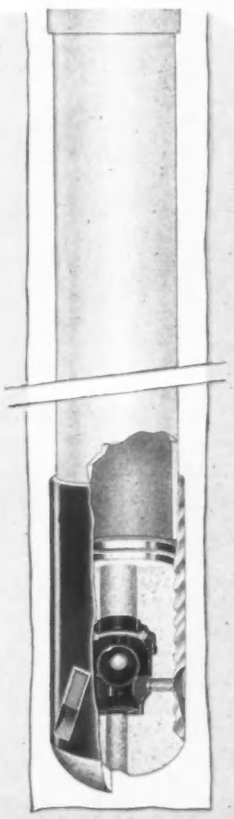
But the importance of CEMENTING CONTROL does not stop there. How about control when the slurry reaches the point of discharge — the Shoe? That's where control is really important and that's where the Baker Cement Wash-Down Whirler Shoe plays its part in CEMENTING CONTROL!

It's the baffled whirler ports in a Baker Cement Wash-Down Whirler Shoe that do the trick. When the slurry strikes these baffled ports, a downward and then an upward whirling action results. This important whirling motion assures best possible distribution of a uniform body of cement entirely around the Shoe and the Shoe joint, thus reducing the hazard of channeling to a minimum AND SAVING A POSSIBLE COSTLY RECEMENT JOB.

REMEMBER, if you use a BAKER CEMENT WASH-DOWN WHIRLER SHOE, you have not only the *best cementing shoe that money can buy* but the shoe *best suited* for doing a successful cement job the first time!

*C.C. stands for CEMENTING CONTROL — A Baker Cement Wash-Down Whirler Shoe *Gives complete* C.C.



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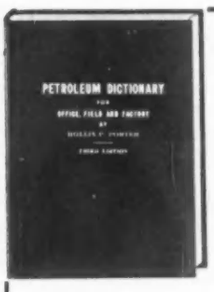

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WITH THE EDITOR

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Use of Stoichiometry In Gas Cycling Operations

An article to be published shortly will show a method for allocating the flow of dry gas from an input well to various producing wells in a cycling project. This is done by means of stoichiometry, or the use of a material balance in which a small percentage of air serves as a tracer. In addition to this information, these calculations give the engineer an idea of the denuding action which the dry gas has, both on the crude oil held in the reservoir and that which is produced at the surface.

The OIL WEEKLY, Published every Monday. Entered as second-class mail matter December 23, 1916, at the post office at Houston, Texas, under act of March 3, 1879.

EDUCATION

Far sighted parents encourage their children to use the typewriter!

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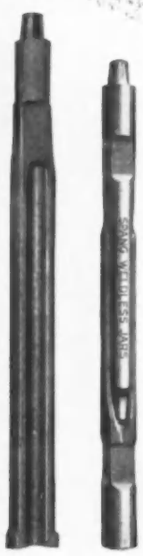
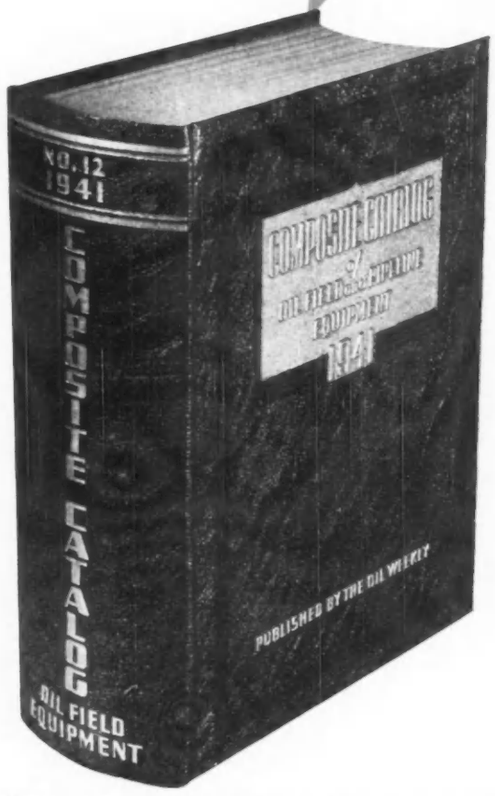


for CABLE TOOLS

for WELL PACKERS



In the Composite Catalog, the most detailed information on Cable Tools will be found in the Spang Section—Pages 2311-2338. Spang is the leading name in Cable Tools throughout the world.

Packers of various designs and for special purposes are illustrated with complete descriptions, plus valuable information on their methods of operation.

Inquiries on your cable-tool problems and requirements are invited.

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Republic Electric Weld Tubing JOINTS STAY TIGHT

REPUBLIC STEEL
DEFENSE FOR AMERICA

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If our American way of life is to survive, every industry must work in close cooperation with the industries that serve it and, in turn, with the industries it serves during this period of peak demand for goods.

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R. J. Wysor
PRESIDENT

● After watching the setting of a 3253 foot string of 7" O. D. 24 lb. Grade H-40 Republic Electric Weld Casing and the completion of the well with 2⅞" O. D. 6½ lb. Grade H-40 Republic Electric Weld Tubing, a Texas Drilling Superintendent stated that he had been one who originally questioned the idea of round threads on tubing. Experience had proved to him, however, that round thread joints on tubing in a well on the pump showed no signs of loosening even after a long period of time—and he is now a steady round-thread tubing user. ● Because America soon will be needing crude in fantastic volume, just remember that every feature of Republic Electric Weld Casing and Tubing speeds completions.

Literature giving recommended setting depths for various grades of Republic Casing sent on request.

REPUBLIC STEEL CORPORATION

Howard Supply Company
Los Angeles, California

General Offices: Cleveland, Ohio

Republic Supply Company
Houston, Texas

BERGER MANUFACTURING DIVISION • CULVERT DIVISION • NILES STEEL PRODUCTS DIVISION
STEEL AND TUBES DIVISION • UNION DRAWN STEEL DIVISION • TRUSCON STEEL COMPANY

REPUBLIC ELECTRIC WELD

LINE PIPE—NORMALIZED CASING AND TUBING

CASING SERVICE

Remember that your casing cost is measured in terms of service, and not in the price alone.

Into Youngstown casing is built the strength and quality to insure trouble-free running in and satisfactory performance through a long lifetime. Every length of pipe is built to exact specifications and closely inspected at every step, with a final strenuous hydrostatic test -- your assurance of a margin of safety adequate to meet severe service requirements.

In casing just as in drill pipe, tubing and line pipe, the added service you get from Youngstown makes it the cheapest in the end.

THE YOUNGSTOWN SHEET AND TUBE COMPANY

General Offices - Youngstown, Ohio

On this huge Youngstown machine, round billets for seamless tubular goods are being "peeled" to insure that the finished pipe is free of surface defects.

2-29D

OIL COUNTRY YOUNGSTOWN TUBULAR GOODS

YOUNGSTOWN

Manufacturers of Carbon, Alloy and Yoloy Steels

Youngstown's pipe is distributed by:
The Continental Supply Co., - - - Dallas, Texas
Continental Emsco Co., Inc., 30 Rockefeller Plaza, New York City
The Youngstown Steel Products Company, 610 Petroleum Bldg., Los Angeles, California

Ask your distributor for Youngstown Pipe and Tubular Products - Sheets - Plates - Conduit - Bars - Tin Plate - Rods - Wire - Nails - Tie Plates and Spikes

DRILLS THIRTY-EIGHT 1,200′ WELLS WITHOUT STRETCH or SHUTDOWN!

JAMES S. SMITH
OIL DEVELOPMENTS
3013 NINTH ST. - PHONE 3333
WICHITA FALLS, TEXAS

March 11, 1941

Goodyear Tire and Rubber Co.
Akron, Ohio

Gentlemen:

During November 1938, I purchased one of your Goodyear "THOR" six ply, fourteen inch spudder drive belts and placed it in immediate use on the combination rig shown in the accompanying picture.

This rig has made thirty-eight wells of twelve hundred foot depth, during that time, with this belt thereon; and the belt is still in good going condition, and will probably make quite a few more wells before being replaced.

During the drilling of a well this Band wheel will turn about one hundred revolutions per minute, continuously for about six days. The Band wheel is of ninety-six inch diameter while the drive pulley is only twenty inches in diameter, so that the belt travels over the drive pulley about five hundred revolutions per minute all during that time.

Lately, I have equipped a newer and heavier model rig with the same type belt as above and am getting splendid results from that belt also.

It is a pleasure to recommend this belt to any one desiring a belt for hard wearing qualities and long service.

Sincerely yours,

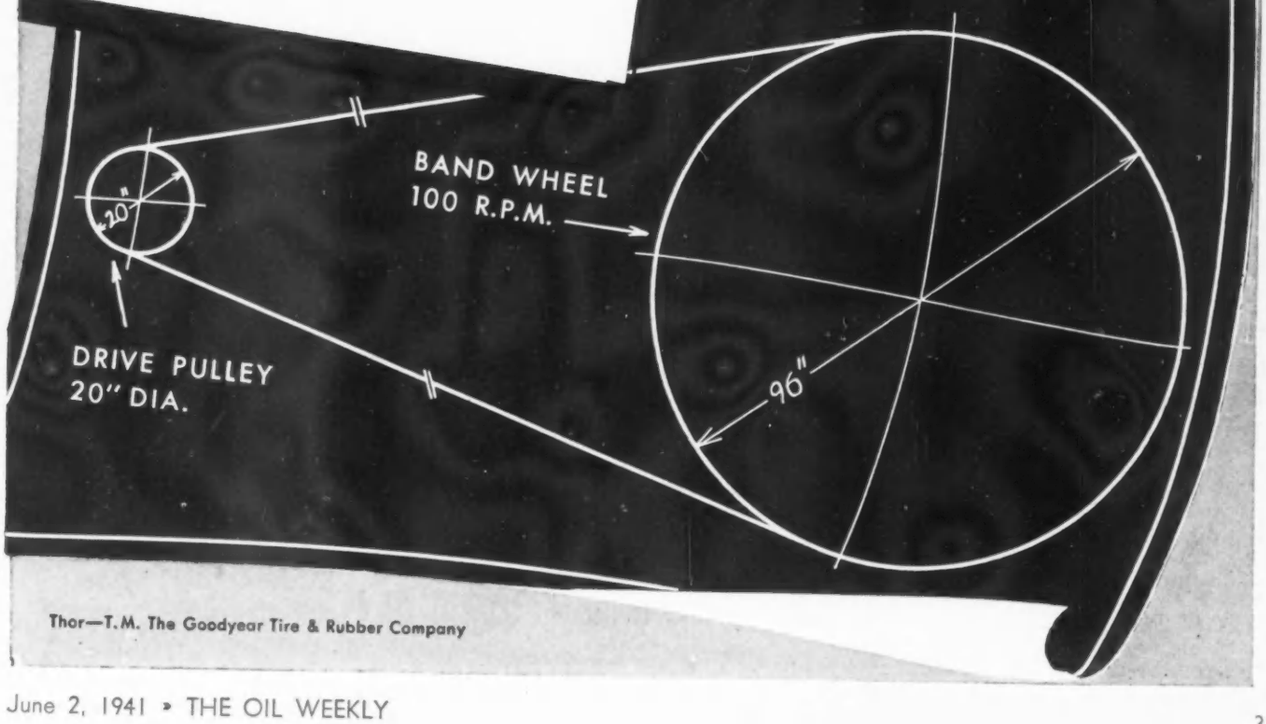
James S. Smith.

JSS/RO

If you'd like this kind of service on your heavy-duty drives, send for the G.T.M. — Goodyear Technical Man. He will be glad to recommend the belt best adapted to your needs. A line will bring him to your rig. Write: Goodyear, Akron, Ohio or Los Angeles, California — or phone the nearest Goodyear Mechanical Rubber Goods Distributor.

THE GREATEST NAME IN RUBBER
GOODYEAR

GTM-Specified
THOR BELT
42½′ long x 14″ wide, 6-ply
for SPUDDER DRIVE
Installed: 1938



Thor—T.M. The Goodyear Tire & Rubber Company